1. Introduction

The social science since its inception had paid the great attention to the study of human's condition in the society and his/her role in social relations. However, even recognizing the importance of human development and human's capabilities in social progress, the scientists of 18th and 19th centuries had been given a priority to the study of physical factors of growth and development of the society. Obviously, the main reason for this approach was the level of decisive human's role, which by that time, as well as his/her creative abilities, did not played a determinative role in the development of society yet, as it became later. However, despite strong economic growth in 1950's – 1970's, most of developing countries did not solve the problems of poverty, low employment, quality of life and standards of living improvement. All this had urged scientists to realize that in the developing world the needs for food, shelter, education and healthcare directly contribute to higher productivity and overall socio-economic growth. It was namely the time when social science begun to be actively interested in such conceptions as "population quality", "quality of life", "living standards", "human capital", "social capital", "human potential", "human development".

It is evident from the history that the territory of modern Kazakhstan never had been overpopulated. The societies lived in the territory of Kazakhstan, throughout its history always were in need of more population. High fertility intensions were culturally sanctioned in these societies. Society and state predominantly followed the path of quantitative development of population. The size of population always mattered for Kazakh society too. The first decades after independence (actually up to now) were marked not only by ideas of national, cultural, linguistic, religious and other revivals, but also by ideas of demographic revival. The dominance of extensive economic development of our country during last decades has hypertrophied the significance of quantitative aspects of population growth and labor resources to the detriment of its qualitative characteristics. However, we have to realize that sole concentration on quantitative issues of the population can not solve demographic and socio-economic problems which are present today in Kazakhstan. Thereupon, the matter to study the category of population quality is rising very urgently in our country.

Nevertheless, in development of theoretical fundamentals of phenomena such population quality and human capital, the situation is not so clear. In the world of social science the conceptions of human capital and population quality still were not clearly stated. Evolutionary development of society is accompanied by the evolution of the human conception in the society and economic system. There are still rather big misunderstandings on theoretical level concerning issues of human capital and population quality in social science. Thus, the questions of the human in modern world, his/her role in development, his/her ability and his/her future, his/her capital and qualitative characteristics (such education, health, values, abilities, skills and so on) became one of the most important issues of the modern population studies.

Open discussion in the study of human capital and population quality, the imperfection of conceptual apparatus, the high practical significance of human capital and population quality regulation have **determined the theme** of this Master Thesis, object and subject of the study, led to the study objectives.

The task for this Master Thesis is giving the discussion of theoretical issues, main methods of measurement and main peculiarities of historical stages and current situation with human capital reproduction in Kazakhstan. We will discuss several theoretical difficulties associated with conceptualization of categories as population quality and human capital. Writing this Master Thesis, we intended to provide reader with information about phenomena of population quality and human capital as scientific categories and necessary factors in development of the society and state, as well as, with information about development of human capital in Kazakhstan from the end of the 20th and the beginning of the 21th century. The **object** of the research is studying of the phenomenon of human capital as scientific category as well as the population of Kazakhstan. The **subject** of study is a current level of human capital in Kazakhstan. The main **goal** of the thesis is the perceiving socio-demographic changes and the process of a modern reproduction of human capital in Kazakhstan. In this Master Thesis we will concentrate on:

- Exploration of concepts and approaches in the study of human capital phenomena;
- Identification of key factors of human capital formation and reproduction;
- Grasping the main characteristics and trends in human capital formation in Kazakhstan;
- Definition the role of social sphere institutions in reproduction of human capital;
- Description of the specificity of human capital reproduction in Kazakhstan.

Chapter 2 reviews theoretical background as well as evolution of concepts which developed in concordance with the evolution of human's role per se. This chapter also tries to examine the basic structure, components and types of human capital, look for main factors and cycles of human capital formation and reproduction. Another important issue, which leaves many unresolved questions, is the matter of methods of measuring human capital. After giving general necessary theoretical introduction to the topic we tried to explore the links between population and human capital reproduction regularities, the evolution of population and human's role in socio-economic relations and demographic and social aspects of human capital formation.

Chapter 3 mostly consists data on Kazakhstan: basic stages and trends of demographic development and human capital formation in Kazakhstan from the end of the 19th and the beginning of the 21th centuries with specificities of each period in terms of political and socio-economical factors which resulted by significant changes in processes of population reproduction and accordingly human capital development. We gave brief outlines of studies about human capital in Soviet period, development of human capital during the transition period in Kazakhstan, specificity of human capital development in Kazakhstan and its regional differentiation and discussed the relevance and limitations of statistical data on Kazakhstan.

2. Theoretical and conceptual fundamentals and methodological aspects of "population quality" and "human capital" categories.

2.1. Evolution of ideas and conceptions about population quality and human capital as scientific categories

2.1.1. Development of ideas about qualitative characteristics of population

Population is the main component of a country, national wealth and the main engine of the growth. In social sciences, there is an explanation of the category of "population quality" as the integral characteristics of many people, united in a community, which determine the level of efficiency of their vital activity. Population quality is the characteristic of people which expresses the level of their ability to carry out activities under different conditions for their development. The population quality becomes a resource and a guarantee of a stable development, the basis of the national, economic, social and cultural security of a state and a society.

Population quality has been approved in the conceptual apparatus of modern social sciences. Because, now, it is not met in form of quotation marks, as it was expressed for years before, being treated as something conditional and not scientific category. Today, having its scientific status, the population quality currently is undergoing the phase of deepening its conceptual fundamentals. And, of course, we have many questions for discussion here.

Many scientists were interested in questions of population quality, starting from ancient times. In the 6th century B.C., Confucius connected the population quality with the preservation of family traditions, motivation and life principles of individuals. In the 18th century, J. Bielfeldt considered the quality of the population as a factor of wealth (Journal of Biosocial Science, 1982). In 1897 the term "population quality" was mentioned in the Chief of Paris Statistical Bureau, Jacques Bertillon's book "The problem of depopulation" (Le problème de la depopulation). One chapter of this work was called "The quantity and quality". The author himself did not reveal the population quality as a scientific category, he just warned and opposed to its treatment as the supremacy of one nation over another (Schneider, 2002).

The initiation of population quality as a scientific category took a long time. Close attention and serious scientific research of the populational issues was received only by the 20th century. Conditionally, two approaches can be taken into account: (1) Socio-biological; (2) Socio-economic.

The concepts, explaining the idea of population quality, based on biological approach begun to develop at the turn of 19th and 20th centuries, during the period of rapid development of evolutionary theory and genetics. Supporters of this approach considered the human and the population just as part of nature, and conception of "population quality" considered as a purely biological category. However, some authors insisted that the formation of biological features and qualities of human, are regulated also in the social conditions, while others believed that it is the biological characteristics of the population which define the social life.

Walter F. Bodmer, Luigi Luca Cavalli-Sforza and Philip Morris Hauser were essentially inclining to the idea of the social regulation of the qualitative characteristics of the population with biological character. (Hauser, 1944), (Taubman, 1976)

In 1939, Henry Pratt Fairchild proposed the concept, based on the idea of the biological essence of man. "Every society has taken the idea that the human is an animal then it is natural to move this principle in the field of human relations. Let us, accordingly, grow the bests in conjunction with the bests or at least, betters with betters"(Fairchild). According to the scientist, "the basic desired qualities of human are health, positive disposition, intelligence, integrated physical basis and the impact of genes contained in the original cell of the body" (Wolfe, 1940). A similar view had J. A. Beardmore, considering that "anti-social behavior is determined by specific genes" (Beardmore, 1967);

There has been a considerable output of generalizations and of programs for the improvement of the quality of succeeding generations of human beings. These so-called eugenic programs have been widely propagandized and have in some cases received the official backing of governments, but the scientific ground-work on which they are supposed to rest is still in many respects incomplete and shaky.

“The founder of eugenics, Sir Francis Galton systematized these ideas and practices according to new knowledge about the evolution of man and animals provided by the theory of his cousin Charles Darwin during the 1860s and 1870s. After reading Darwin's Origin of Species, Galton built upon Darwin's ideas whereby the mechanisms of natural selection were potentially thwarted by human civilization. He reasoned that, since many human societies sought to protect the underprivileged and weak, those societies were at odds with the natural selection responsible for extinction of the weakest; and only by changing these social policies could society be saved from a "reversion towards mediocrity," a phrase he first coined in statistics and which later changed to the now common "regression towards the mean." (Wikipedia)

“The eugenists (Pearl, Thompson, Jennings, and Haldane) start out by viewing human as an organic type whose hereditary characteristics are the result of the same processes as those producing the characteristics of other animals. These processes are essentially summed up in the two terms mutation and natural selection although other factors such as isolation, population size and (possibly) emergence or an “elan vital” play some part.” (Woodward, 2008)

Quality is measured in terms of fitness to survive and breed descendants, consequently the differential rates of increase or decrease as between two type-forms are the only naturalistic indices of their relative quality. According to eugenists in cultural society there are two types of selection operating simultaneously. The first of these is natural selection which is adaptive to the environmental conditions over which human still exercises little or no control, the second is cultural selection which is adaptive to human-controlled environmental conditions, both in the biological (fauna and flora) and the physiographic (climate and topography) portions of the environment and especially in culture itself. "Cultural selection does not necessarily support natural selection to maintain or improve a quality defined in the naturalistic sense. It may do so but on the other hand culture may set up its own implicit or explicit standards of quality that may be inimical to the long-time naturalistic standards. Furthermore, as has been often pointed out, cultural selection may be extremely rigorous and modify biological type with relative rapidity; it may therefore overturn within a relatively short period the work of a natural selection operating over many generations". (Woodward, 2008)

Another unique conception, the A. H. Halsey's conception, took a special place among the socio-biological concepts considering genetically caused population quality as a determinant of social processes. Halsey believed that the genotypes are determining the possibility of development, and the environment, in the other hand, is determining what are the opportunities and to what extent they will be realized in the individuals' lives. Halsey, in his works, recognized the strengthening of social factors role and reduction of genetic factors role in shaping the population quality. (Schneider, 2002)

The interesting analysis of social and biological factors in shaping population quality was displayed in the P. R. Cox's approach. Without denying the importance of biological factors, he acknowledged that the current quality of the population is more dependent on social conditions, rather than eugenical means. "The absolutization of such approach, i. e. the consideration of human only as an animal can lead to unreasonable and inappropriate practical recommendations. It is indisputable that the human experiences the impact of nature, but these characteristics are not exhaustive. As society changes, the biological evolution is less defined in human nature (although, scarcely, the effect of biological factors will reach the zero level). Only in the society human can develop his/her personal qualities, so his/her equalization to animal is improper". (Schneider, 2002)

In this regard, another group of researchers based, in their researches, on socio-economic approach. Here, human is viewed solely as a social phenomenon, all the parties of his/her development are, prima facie, defined by labor. The concept is based on two starting points:

1) Biological features in human are not essential for his/her historical development. They are completely dissolved being internally connected with the social features, as a result human ceases to be a biological substance. The features of population determined only by social environment.

2) Labor is recognized as a foundation of human society and the driving force of human development. The labor had created the human and therefore the quality of laborer is the starting point in the forming of population quality.

The first large-scale elaboration of the phenomenon “population quality” was made by Lambert-Adolph-Jacques Quetelet (1835). At the core of his philosophy underlies his thesis: "the laws managing development of people and altering their behavior, in general, are a consequence of the way of organization, education, economic well-being, institutions, local influences and many other reasons, of people themselves..." Thus, Quetelet considered population as a growing phenomenon and attributed this development to the specific abilities of human, i.e., to his/her qualitative determinacy (the term "quality" Quetelet used later). Nevertheless, the relationship of population features with productive forces was pointed by Quetelet intuitively, but its dialectics remained unrevealed by him. Although Quetelet did not offer his own definition of population quality, but owing to him for the first time the problem was seen with other positions. Quetelet’s work based on the principle of "average citizen", according to what, with an increase in the number of observed individuals "their individual, physical, intellectual and moral characteristics disappear, and the main societal facts on which society exists and persists is put forward ". Modern methods of assessing the population have opened new possibilities for the usage of the "average citizen" for developing the concept of population quality, because "the average human of each era is a type of human development in this era, which displays at local and temporary conditions human’s improvement abilities". (Eknoyan, 2008)

The classics of Marxism, also, dealt with the problems of population quality, using this term to describe one of the material conditions of production. In one of his early written works Karl Heinrich Marx wrote that the essence of "special human is not a beard, not his blood, not his abstract physical nature, but his social quality". (Marx, 1990)

Since the 1970's in the social sciences, the issues of population quality had been given an increased attention. Population quality was mainly interpreted based on the theory of human capital, emerging through investments in health, education, skills, etc. Obviously, at that period the socio-economic approach to research dominated, which was due to need to explore additional reserves of economic growth. In conditions of low population growth rates, in general, and low labor force growth rates, in particular, the quality of the workforce started to be considered as a decisive factor in economic growth and progress of a society. For example, T. Patten Jr. pointed out that the real wealth should be measured through the quality of population, living in the country and working in the different organizations. He determined the quality of the workforce as the unity of education and work experience, and he equated labor forces to human capital. (Ramsden, 2002)

Mark Blaug paid much attention to the qualitative characteristics which can be improved by various kinds of education and training. He understood population quality as "a state of health, food and level of skills and abilities". (Blaug, 1992)

One of the most significant contributions to the development of the general idea of population quality was made by Theodore William Schultz. The starting point of his research was the statement: "the economic role of natural resources and intermediate products is small with comparison to the role of human services in production and consumption". Applying to the analysis of population quality formation patterns, Schultz opposes a quantitative and qualitative theories of the population, considering its size and stressing that development of “qualitative theory” is complicated by "the difficulty of defining and measuring the phenomenon of quality". (Schultz, 1994)

The preponderance of socio-economic approach in the studies was the result of scientists’ awareness with the place and role of human in the development of society and the consequence of a comprehensive study of socio-demographic processes (which was a big step forward, actually). A new impetus to the study of the population quality was given by works of Alfred Sauvy, in which he combined some of the principles of biological and socio-economic conceptions. In his opinion, the growth of the population quality is on the way of human’s physical improvement, and more importantly, his intellectual and moral improvement. (Sauvy, 1966) Population quality attracted the attention of the Rome Club members. Aurelio Peccei, in his book "The human quality", (founder and president of the Club), indicated that the main problem of humanity is that its nowadays cultural development lags behind the realities of modern times which were developed by humanity itself. Only by improving quality of humanity, people can use for their benefit the enormous potential of material world. (Barbieri Masini, 2004)

So, what exactly Population Quality is?

Taking into account aforesaid, the author renders the following definition of population quality, it is *the functional characteristics (abilities) of population, which allow population to meet new challenges and use the socio-objective reality, not only to live in these various new situations, challenges and changes (structural, ideological, economic, social, political), but also use them for development of population itself.* This is a level of population abilities to live in different environments and to amend them for it-self. Like an individual human, a society can and should be healthy (physically and mentally), educated, rich, happy, cheerful, positive, purposeful and successful. Population quality is expressing, also active set of abilities that people have, because of the experience of historical development on particular territory.

It is also important to remember that for a population the quality and the quantity are not mutually exclusive, they are mutually, complementary and closely linked concepts. Evidently, the features of the population quality are defined by the socio-economic, technological, cultural, environmental and many other conditions. These conditions, however, do not have a direct and unambiguous impact, but they form the human behavior (including its demographic aspect), which, in turn, underlies the basis of relations and changes in population

(since the category of quality is changing or by other words the idea what is the quality concerning population is constantly changing). This means that quality specifications are a subject to change as a result of changes in human behavior, i.e. during the transformation of attitudes towards meeting various needs of the population. At the same time, qualitative characteristics (whatever is the standard for quality) have a significant impact on demographic behavior, at both, the individual and the collective levels. In this context, the exploration of mutual influence of changes in population quality and in the social and demographic processes, in depth, will allow to disclose important determinants of the social and demographic behavior changes and development in society. In other words population quality as a concept enables to observe the interaction process of mutual influence of the social and demographic aspects, as well as, influence of intrademographic aspects to each other.

The notion "population quality" is not a substitute for the set of characteristics of demographic processes, but it is a focus on the unity of these characteristics as mutually complementary elements of population reproduction, explaining their conditions and patterns of change. Certainly, the phenomenon of qualitative characteristics of population can not be expressed only by one measure and one notion or by a single idea, and today the issue of forming a clear system of indicators becomes utterly urgent and insufficiently developed for adequate scientific reflection of the population quality phenomenon.

In the end, we would like to point out, that the study of the population quality phenomenon expresses the certain level of the cognition of population, the certain level of knowledge about population, which enables us to allocate population among the many other objects of study and differentiate the various types of population. The “population quality” as a scientific category describes the processes of population reproduction in specific historical conditions, fixes the correspondence of population and the surrounding environment, indicates the causes of changes in population under the influence of transformation of socio-economic, climatic, techno-economic, socio-cultural and other factors. The population quality expresses and identifies the united characteristic which underlies the basis of population properties and their changes by reflecting different specificities of interaction of these properties. All this enables us to consider the “population quality” as a nodal category of general population theory, and its elaboration as a prerequisite for an integrated approach to the study of the population.

From population quality to quality of life and standards of living

The qualitative characteristics of population and demographic processes are situated in two relative ideological areas which are determinated in the scientific concepts of “population quality” and “quality of life” (QOL). The term “quality of life” accumulates the basic *conditions* of human existence and development. The population quality is the *level* and the result of population development, which determine the further development of society. Quality of life is the conditions for the development and the needs of the population. Population quality is what

inside of people, and the quality of life is what outside. At the same time, qualitative characteristics of population reflect what have been accumulated during the period preceding the effects of the current living conditions, i.e. QOL. Practically, all the characteristics of people's life are interrelated by direct and reverse linkages and that is why their combination is a complex system that organically links population quality and quality of life. As a result, through the scope of needs, the population quality stipulates the basis of the QOL.

Quality of life is not limited to the standard of living, which indeed serves as one of many criteria of QOL. The standard of living refers to the quality and quantity of goods and services available to people, and the way how these goods and services are distributed among a population. "It is generally measured by standards such as income inequality, poverty rate, real (i.e. inflation adjusted) income per person. The other measures such as access and quality of health care, educational standards and social rights are often used as well. Examples are access to certain goods (such as number of refrigerators per 1000 people), or measures of health such as life desires. It is the ease by which people living in a time or place are able to satisfy their wants." (Wikipedia)

"The idea of a 'standard' may be contrasted with the quality of life, which takes into account not only the material standard of living, but also other more intangible aspects that make up to human life, such as leisure, safety, cultural resources, social life, mental health, environmental quality issues etc. There are many factors being considered before measuring standard of living. Some factors are gross domestic product, the per capita income, population, infrastructural development, stability (political and social), and many other indicators. More complex means of measuring well-being must be employed to make such judgments, and these are very often political issue, thus controversial. Even among two nations or societies that have similar material standards of living, quality of life factors may in fact make one of these places more attractive to a given individual or group.

However, there can be problems even with just using numerical averages to compare material standards of living, as opposed to, for instance, a Pareto index (a measure of the breadth of income or wealth distribution). Standards of living are perhaps inherently subjective. As an example, countries with a very small, very rich upper class and a very large, very poor lower class may have a high mean level of income, even though the majority of people have a low "standard of living". This mirrors the problem of poverty measurement, which also tends towards the relativeness. This illustrates how distribution of income can disguise the actual standard of living." (Wikipedia)

From population quality to human potential

Although, the category of population quality was used in the scientific literature previously, still, its full content hardly has been detected, and thus a theoretical and methodological base of this issue has not been developed. It should be noted that currently some researchers are actively

using and treating the category of "population quality" as a synonym for "human potential". Of course, these concepts are very closely linked. But in our view, to wide extent the term human potential can be considered as a set of abilities and rights of a human at birth, which develops at the process of further socialization, in various ways, depending on many factors. The concept of human potential is intended to disclose with the maximum fullness the idea of human's self-value. There are many different specific forms of human potential: for example, in social and organizational context - as human resources, economically - as human capital, social and environmental - as vital potential (overall vitality, vital capacity), in cultural - as a moral potential.

Regarding the notion of "population quality" it should be understood as a category which characterizes the population as a subject of social life, social production and social relations, i. e. the ability of population to react to emerged environmental, technical, economic, social and cultural conditions and adjust them for changing needs of population. If you consider population quality and human potential in this context, it is clear that, despite the clear and interdependent relationship of these concepts, they are, actually, not identical in content.

Human Potential and Human Development

For a long time, the development models of the society which focus on economic growth and ways to accelerate this growth have been being prevailed. It was believed, that the economic growth automatically will lead to progress in human development and in whole society. Further, the formula "economic growth" = "human development" has not been justified and has resulted in intensification in socio-political instability and poverty.

Therefore, at the end of the 20th century, the concept of human development had become the most attractive issue, the primary purpose of which is the realization of the needs and aspirations of the human. As early as the 1970's the theorists of the Rome Club, analyzing the structural relationship and the conflict between nature and society, concluded that "the development and deployment of human potential is what, ultimately, determines the success or the failure of economic, social and any type of development". The club recognizes that investment in people, today, is considered as the most effective investment. Thus and so, the questions of the human in modern world, his/her future, role in development and qualitative characteristics (such education, health, values, abilities, skills and so on) became one of the most important issues of the modern population studies.

In the last decade of the 20th century, experts from international organizations, like UNDP, had developed the modern concept of human development, which puts human in the center of the social progress and considers economic growth as means, rather than, as the ultimate goal of human development. This concept leads to the conclusion that not only GDP should be considered as the main indicators describing the development of a society, but also the parameters that characterize the health, education and access to information. The emphasis

is made on the so-called human development or human potential development, the achievement of this level of development is evaluated not only on indicators of income, but also on such factors as life expectancy, the proportion of adult literacy and accessibility to education. In wide extent, the concept of "human development" includes all aspects of development of the human personality beginning from the state of his/her health and ending with the state of his economic and political freedom. So the human potential development represents the greatest possible realization of human capabilities.

2.1.2. Human capital as a category of economic quality of the population

We have seen that population has not only quantitative parameters and determinants, but also it has very important qualitative characteristics. The qualitative characteristics of population can be expressed by different measures, approaches, understandings, assumptions and cognitions. In sense of basic population studies, the population quality is the unifying global category and aspect. The population quality occurs as integrative characteristic in population studies, not only in terms of describing particular properties of the population, but also it is integral to all categories which express different characteristics of the population. Its concept stands far above all modern and fashion theories about population. The understanding of population quality is crucial, today, for creating the effective strategies for social development. Perhaps, the category of population quality is the most extensive and the broadest category-concept in terms of describing the properties of the population. It has a different dimensions and features. The concept of population quality is very large idea, which develops today in many different areas of social and fundamental sciences. As you have noticed many different authors understand and research the population quality differently. And this is absolutely correct. Since the quality of population can not be impressed only by one concrete dimension. Because population has different meanings and approaches for research. Moreover, the population, by itself, is developing very rapidly through all human history. On the other hand the idea of quality is also developing and has different meanings and approaches, as well. So in the situation when ideas of both the population and the quality have different approaches and meaning, along with development paces, for scientist, their unification and making joint category as "population quality" doubtlessly create very multi-dimensional and multi-approached understandings of given phenomenon. Which is, in turn, all the way is justified. And all this approaches and understandings are correct and true in each case and context. As the most appropriate category which successfully describes the economic component of quality, characteristics and properties of the population we consider the category of “human capital”.

Human capital as a scientific category is the most economical among the socio-demographic, and the most hominal among the economic categories. Human capital is the economic quality of the population, economic potential and quality of individuals, groups and the whole society. Human capital is the sum of knowledge, skills and other abilities of human, formed, accumulated and improved as a result of investment during life activity, required for a specific purposeful activity and promoting the growth of productive force of labor. (Becker, 1993) Human capital refers to the stock of skills and knowledge embodied in the ability to perform labor so as produce economic value, formed as a result of investment and accumulated human's health, knowledge, skills, abilities, motivations which are expediently used during the process of labor, contributing to human's productivity and wage increase. Many early economic

theories refer to it simply as “labor”, one of three factors of production, and consider it to be a fungible resource, homogeneous and easily interchangeable.

Since we are interested in mainly economic constituents of quality, we will deeply discuss the idea of human capital in this paper. We think that the socio-economic side of population quality can be expressed and described, in simple and the best way by concept of human capital. Some can say that the human capital is also very large concept and approach, not narrower than population quality per se. But we think that human capital has very strict borders of conceptualization anyway, mainly economic interests and determinants. So, we think that anyway idea of population quality larger than concept of human capital, which is, in turn, describing some measures of general quality of population. And by choosing the concept of human capital we would like to deeply discuss further this concept, concentrating on socio-economic side of population quality.

Actually, the idea of “capital”, per se, in some extent already expresses the quality of the object. “Capital is inherited and acquired by human abilities and qualities.” (Wolch Jr., 1935) So we can set the objective of this work as provision of expanded notion of the ideas of “capital” and “human capital” as the qualitative characteristics of the population and human. In economics, the term capital or capital goods or real capital refers to items of extensive value. The term can also be applied to the amount of wealth controlled by an economic agent (human, company, society). Capital is the aggregate relations and commodities expressed as a value that can bring whether surplus value or loss. Capital is not the thing, not the property, but historically defined economic relations regarding things, the attitudes about the changes in their value, i.e. their capitalization.

Human capital theory studies the process of qualitative improvement of human resources, forming one of the central divisions of modern labor supply analysis. The development of innovative economics is not impossible without increasing of employment and labor productivity. Here, not so much the quantity as the quality of labor force plays the decisive role. According to the theory of human capital, the quality of the workforce is one of the main factors of economic growth. In turn, the quality of the labor force depends on the level of human capital, which includes the ability, knowledge, skills and competence intrinsic to the individual. Its most important forms and conditions are the formal education, the trainings and the labor migration. Any imbalances in these areas lead to a decrease in the quality of the workforce, and therefore productivity, which adversely affects the trajectory of economic development. During the origination stage of capitalism the basic condition for development of production or manufacture was the idea of "labor force", or ability to work, "aggregate physical and moral abilities" of a human, alive human personality and forces which were put in motion, every time when he/she produced any use-values. The human was considered as means of labor, as productive forces and his/her abilities were evaluated only during the process of economic goods production. Physical and moral abilities had qualitative dimensions, but were not presented structurally and were evaluated simplistically in quantitative measurement.

The evolutionary development of the society has been led by the evolution of human's status in social relations, including economic relations. Since the labor expresses a conscious, teleological and resultant activity and the most significant part of human's life, the concepts in this area (scientific areas studying labor) transformed most actively. By the middle of the 20th century the profound changes in technological basis of production as well as in socio-economic forms of human interaction have taken place. This had required a re-examination of all economic categories and the reproduction system in whole. At that time methods of economic analysis were being improved, the subject and the object of research were being specified, new divisions of economic theory were being elaborated and developed and the differentiation of economic sciences was being expedited. New conditions of life and economic activity demanded a new detection of human's role, his/her intellectual and social abilities, the elaboration of human capital theory, where center-gravity of researches had shifted from the processes of using labor force to processes of creating qualitatively new labor forces.

With the increase of role of scientific and technical progress in the economic growth, economists had changed their attitudes towards the problems of labor-power reproduction. At the center of scientists' attention stood the questions of a qualitatively new labor force *creation*, while, previously the main issues concerned to the *use* of this existent labor force. The structural changes in the total labor force and the interest in factors of economic growth and economic dynamics had caused the origination and development of theory of human capital. Theodore William Schultz and Gary Becker became pioneers in defining human capital as a holistic concept, focusing on investment in human capital and evaluation of its effectiveness. Investments in enhancing human capabilities lead to increased productivity, to increase of profit, including increase in employee wages. Which means that, the reproduction and accumulation of income is taking place by means of human capabilities, which make them a special form of capital. Russian economist M. Kritsky defines human capital as "a universally specific form of human's vital activity, assimilating consumptional and productive pre-forms of the society life, which corresponds to the ages where products were appropriated and produced, and implemented as a result of the historic movement of human society to its current state." (Kritsky, 1995) Acknowledgement of the universality, historicity and precision of human capital can restrict the time frame and socio-economic conditions of existence of human capital phenomenon. This means that human capital, by itself, can be developed through time and generations, as well as, through different socio-economic conditions. Human capital is a complex, diverse and changing phenomenon. Researchers dealing with human capital focus on the different aspects that make them to have the different approaches to defining its essence and content. In the most complete manner human capital can be described as innate and formed as a result of investments and savings, some level of health, education, skills, abilities, motivation, energy, cultural development of both the individual and the group of individuals, or moreover of whole society, which is accordingly used in any sphere of social reproduction, and contribute to economic growth and affect the wages of its possessors.

2.1.3. The evolution of ideas and concepts about human capital as a scientific category

Throughout the human history there were changes of trends in development of material production, in its increasing complexity, in the modes of production and in the tremendous development of the means of production, which had entailed the transformation in the productive forces as well as in industrial relations. During all this time the public opinion was actively seeking for shapes of an appropriate paradigm for the development of the society.
The economy exists for human and at same time it is reproduced by human. The economic activity of human, simultaneously, is appearing as a consequence of the prevailing system of social relations, and as a source of improvement of productive forces and economic relations in the society. The development of a coherent theory of human capital and its organic embedding into the structure of social and economic science has historically carried out consistently as the enrichment of science itself.

There was the great attention in the history of social science to the issues of studying the place and the role of human, to his/her abilities and needs, to his/her economic position and productive capacity. Almost in all schools of socio-economic thought an important place was occupied by problems assessing the role of the economic agent (player, actor) in economy and economic relations. “Homo-economicus”, as an initial economic figure always attracted the attention of scientists. The most consistent and adequate socio-economic role of the human was revealed in the theory of human capital. Initial conditions to assess the human’s abilities as a special kind of capital had already been in the works of the classics of economics such as William Petty, Adam Smith, David Ricardo and Karl Heinrich Marx.

16th - 18th century became the era of rapid development of capitalistic relations. The bourgeoisie as a new progressive class of the time tended to capitalize any kind of values. This interest was aspired to be reflected by economic science as well. Thus, in the works of W. Petty, we find an attempt to assess “value of... people, artisans, sailors, soldiers” as “live effective forces”. “The value of people, like land, is equal to twenty times of the annual revenue which they bring”. (Hay, 1998) Thus, the quantitative measure was suggested for the owner of capital in order to comparatively assess the capital value of prospective employees. Proposed by W. Petty the 20-years period of employment is still the norm in favor of the work period of active employment.

A. Smith directly included skills, knowledge and abilities in the “basic capital which realized in human”. The productive capacity of worker is also involved in the production of income as well as machine building and land, although it does not enter into circulation and is inseparable from the worker. Formation of the labor force as an element of basic capital, i.e. improvement of worker’s deftness and skills requires additional labor costs, time and other

expenses. The costs of employer to train employees, in this respect, are similar to other capital costs and thus become a structural part of the capital. (Campbell, Todd, 1977)

D. Ricardo developed the Smith's idea about the role and the place of human capacities in productive forces of society. He laid out the specifics of the costs structure for the labor force reproduction. He wrote that the use of machines in production requires the education and mastering of natural and technological knowledge of workers. "Surplus capital would be equally valid in the production of future wealth, no matter if it is obtained through workers' qualification or machine improvement". "Educational level of workers affects the level of development in a country". The backwardness and underdevelopment of the country are explained by "the lack of education in all strata of population". (Gootzeit, 1976)

The role of labor and human capacities in the production are thoroughly disclosed by Karl Heinrich Marx. He considered the labor and ability to work as leading factors in economic development, and the workers as the main productive force of society. Already in the manufacture, the division of labor considerably increases the productivity of labor. At factories based on the use of machines, a clear distinction between simple and complex labor is observed, the role of mental abilities and the need for professional training have been increased. Human and his/her abilities are active aspects of production, which impel and regulate the operation of machines and technologies.

Marx was the first who interpreted the transformation of human abilities into specific form of capital. He stressed that human development can be regarded as the production of basic capital. But in the case of capitalism "...labor force in the hands of the worker is a commodity, but not necessarily capital. ...as capital it operates after the selling, in the hands of capitalists during the manufacturing process". "Restoration of workers' ownership for the means of production and physical capital legally would mean the overcoming of ownership expropriation of workers' human capital". (Marx, 1990)

In order to analyze the conditions of human abilities transformation into specific form of capital the Marx's methodological approach becomes very useful for the ascertainment of the capitalization conditions of money, results of production, means of production, land, intangible benefits and all other goods. According to Marx, money is converted into capital under the following conditions:

1) when the money stock turn into money drive and used for value increase, i.e. realize a profit;
2) when labor becomes a source of surplus value, since the cost of labor force reproduction is less than the new value created by labor in the production process;
3) land, labor and services can turn into capital through the capitalization of their return interest, for example, capitalization of different rents;
4) under the domination of private ownership of capital, there appears an exploitation of human by human, when the effect of human capital is appropriated by owners of physical capital.

Alfred Marshall also compared, and even equated the processes of material resources capitalization and capitalization of employees' personal skills. "The incentives of people to accumulate human capital by contributing to education are similar to incentives which determine the accumulation of physical capital". (Wood, 1996) Expenditures on education and skills of workers in enterprises are funded from circulating capital. Since, the work of educated human is more productive, the educational costs can be equated to the investments which increase the income and national wealth. Therefore the investments in accumulation of human abilities can be admitted as a special form of capital, which value is increasing with the complexification of production technology, informatization and intellectualization of labor.

The global economic crisis of 1929-1933 exposed the underlying limitations of private enterprise and competitive market. John Maynard Keynes presented to macroeconomic analysis the inter-subjective factors such as the propensity to consume, the propensity to save and the propensity to invest, i.e. the essential characteristics of unidirectional behavior of households and entrepreneurs. Macroeconomics as a special meta-economics and the role of national human capital in achieving competitiveness and economic growth became the subjects of a special economic research and analysis. (Wood, 1996)

The technological revolution has given a powerful impetus to rethink the role of human, his/her abilities and opportunities in the economy and society. The science becomes a direct productive force. The institution of intellectual property appeared and rapidly grew as a special investment in capital of enterprises. In the structure of business sectors appeared innovative enterprises, while intellectual products and exclusive rights formed a huge and rapidly growing sector of the economy. Intellectual capital as the main asset of competitiveness was recognized in the science and practice of business. The automation of the production and management, network forms of industrial engineering supersede the human from direct production and raise his/her creative, social and organizational skills as the most attractive side of the human personality and at the same time as a basis for separation of human capital.

The above mentioned objective conditions contributed to the development of human capital theory and its organic integration into the general economic theory in the light of its historical development. Such theory has appeared during 1950's - 1990's and developed in the works of Theodore William Schultz, Gary S. Becker, Jacob Mincer, Erich Gundlach, Casey B. Mulligan, Xavier Sala-i-Martin, George Psacharopoulos, Mark Blaug, Yoram Ben-Porath, Burton A. Weisbrod, Finis R. Welch, L. Hansen, S. Bowles, Richard Layard, John F. Ermisch, Barry R. Chiswick, etc. The theory developed in the framework of neoclassical economics and was used in analyses of education, health, family and other areas off-market activities.

T. Schultz is reasonably recognized as a founder of the human capital theory. In the articles "Capital Formation by Education" (1960) and "Investment in human capital" (1961) he described as a rigorous concept his/her vision of a new economic role of the human and his/her abilities in the modern economy. In discussions about the sources of economic growth T. Schultz put in the forefront the role of education. He considered the changes in structure and the

qualitative improvement of the aggregate labor force as the result of investments in education system. Education expenditures are equal to investment in technological progress, since in both cases, productivity and profitability of production increases. Schultz compared the roles of physical and human capital and researched their forms and structures, as well as their interaction and influence on productive efficiency. The fundamental conclusion was done about the leading role of human capital in modern industry, especially in science- and knowledge-intensive sectors of economic activity.

In three-republished monograph by G. Becker “Human capital: a theoretical and empirical analysis” the human capital theory has received a systematic form. Becker wrote that the main incentive factor was the realization that in most countries, growth in physical capital account for the relatively small portion of income. Searches for satisfactory explanations had caused an interest to the less tangible entities, such as technological progress and human capital. In Becker's works, there are widely used quantitative methods and models for studies of investment relationships in human capital and their returns. G. Becker had greatly expanded the understanding of investment in human capital. Most of the household decisions about marriage, children, education, changing jobs, and costs of medicine, take the form of investments. Not only the cost of education, but also the cost of raising children, health, search for information on professional development and other costs are regarded as investment if they “lead to the growth of the productive capacities of human, therefore his/her income”. (Becker, 1993)

The age after Becker is characterized by great interest to the scientific concept of human capital and its wide acceptance. In the work of C. R. McConnell and S. L. Brue, “Economics”, investments in human capital are treated as any action that increases the skills and abilities or labor productivity of workers. “Like the cost of engineering tools and equipment, the costs that improve anyone's performance can be seen as an investment, because current expenses or costs are being incurred with the expectation that these costs will be offset by increased multiple revenue stream in the future.” (Wood, 1996)

They have singled out three basic types of investment in human capital:

1) expenditures on education as the most important type of investment that shape the workforce and foster the skill and productivity of workers;
2) expenditures on health, disease prevention, medical care, nutrition and improved housing conditions, which prolong the active working life, increase work capacity and productivity;
3) costs of mobility, because the migration of workers, as a rule, implemented from low-income jobs to a more high-yielding and productive jobs in the sectoral and territorial aspects.

Proponents of human capital theory developed many types of quantitative methods for analyses of the effectiveness of investments in education, health care, training in production, migration, birth and child care and their returns for individuals, family and society. The main focus of these analyses is human’s productive ability and wage (income) differentiations caused by the different levels of investment. Opponents of this idea, try to ascribe a leading role of the

abilities differentiation in the hereditary and biological factors. They believe that the simple explanation of individuals' income differences with different levels of education, leads to overestimation of the training and education effects. Both of these explanations of causes of differentiation in ability to work and, consequently, in wages (incomes) have been criticized by other scientists. In their view, education acts as a mediator which transforms inequality in social lineage in income inequality. The transmission from generation to generation of economic inequality in society arises from transmissions of links in the world of socio-economic relations and through the adoption of value attitudes, motivations and behavioral stereotypes. Therefore, if at different levels of the production hierarchy the workers with different behavioral characteristics are required, and if the development of these characteristics is carried out mainly in the family, then the social lineage may cause the reproduction of economic inequality.

Finally, C. Jenks showed on extensive selective material that the correlation between education and earnings is found only in aggregate group values, whereas in the analysis of individual data the connection is virtually disappears. Hence the conclusion is that the "differentiation of income is probabilistic in nature and caused predominantly by random factors and variables". (Farmer, Terrell, 1996)

Human capital is a complex, diverse and changing phenomenon. Researchers of human capital focus on different aspects which makes differences of approaches and assumptions in determining its nature and content. Thus, despite the considerable efforts made to develop the labor force theory and sophisticated techniques of statistical analysis of income differentials and the factors causing them all this were unable to complete the creation of a harmonious, well-composed and proved by facts theory.

There are several contentious issues those should be noted, which drew criticism of human capital theory by G. Becker.

- incentives to invest in education are explained by desire to improve the standards of living, thus the theory does not consider such incentives and motives as the desire to advance in social status, to enter specific social groups, etc.;
- factors determining the volume of investments are prescribed in the theory by the ability of the individual and by the opportunities which comes to the well-being of his/her parents. Usage of the first variable (ability) was criticized by the "filter theory", while the taking into account only two mentioned determinants was criticized by sociologists for inattention to social factors;
- other critics have pointed out that "relationship between investment in signals (diplomas, certificates, licenses) and the real level of productivity is far from straightforward, as the theory tried to deem that;
- productivity, in turn, is not always able to influence the wage, which increasingly is fixed and attached to jobs. (Radaev, 1998)

2.2. Types, Components and Structure of Human Capital

The classification of human capital is possible on various grounds and for different purposes. Usually, types of human capital are distinguished by the sorts of investments. T. Schultz indicates that the human abilities “...develop through certain activities, which have attributes of investments”. “Schooling, on-the-job training, health promotion, growing stocks of information on economy” are considered as such types of investment activities (Schultz, 1982, 1994). All these activities are aimed at formation of specific and concrete groups of human abilities, which receive capital assessment and are used as human capital.

Another classical typology proposed by G. Becker, which includes a division between "general professional skills (general skills) applicable outside the company (firm), and special skills in firm (specific skills) suitable only for certain classes of jobs in given company (firm). The latter type provides the employee with better prospects in this organization, but it also binds employee to this organization, restricting his/her working mobility”. Following Becker, the human capital literature often distinguishes between "specific" and "general" human capital. Specific human capital refers to skills or knowledge that is useful only to a single employer or industry, whereas general human capital (such as literacy) is useful to all employers. Economists view firm specific human capital as risky; since firm closure or industry decline may lead to skills that cannot be transferred. (Becker, 1994)

M. M. Kritsky identifies three main types of human capital: “productive, consumer and intellectual capitals”. The reproductive approach to the classification of human capital is important in order to assess the magnitude and intensity of human capital in specific sectors of human activity. (Kritsky, 1995)

Fritz Machlup proposed to distinguish between primary and improved skills. "...unimproved labor has to be distinguished from the improved one, which becomes more productive owing to investments that increase physical and mental ability of human. These enhancements represent human capital". (Machlup, 1978)

More recently, the classification of human capital based on the speed of return rates is often mentioned. Within this classification, migration and search for information are factors with a short-term return, whereas education, training, health care and birth of children are investments with long-term returns.

There is also an approach to the classification of human capital based on the distinctions between groups of skills necessary for active human life.

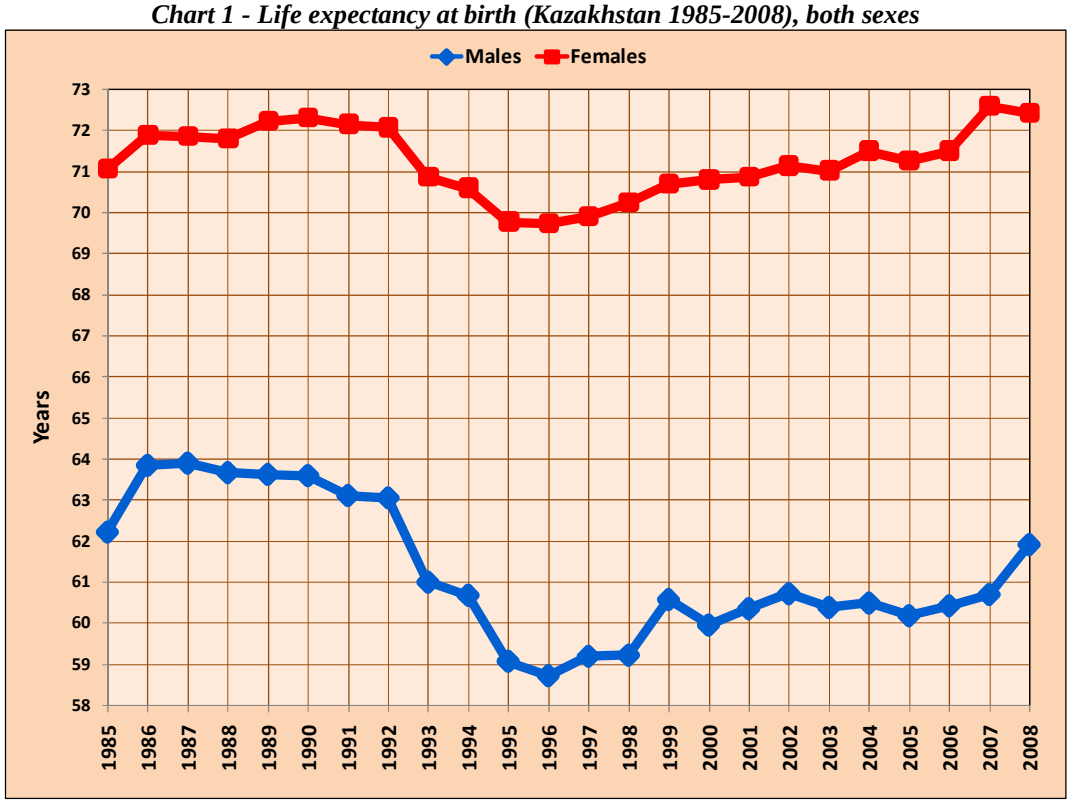
Health Capital (Bio-Physical Capital)

Manual power, physical endurance, stamina, workability, immunity to diseases etc. increase the active work period required for each human in any field of professional activity. Health of

human and nation have huge capital importance and the losses of health and increased mortality directly leads to decrease in productivity. Decrease (reduction) in health capital affects the demographic situation, which currently in Kazakhstan can be assessed as rather complex. The population of Kazakhstan has decreased from 16 690 000 people by 1 January 1990 to 15 776 492 people on January 1, 2009. Demographic indicators for the future allow the evaluation of possible quantitative and structural changes in the capacity of health in the first quarter of the 21th century. In general, demographic projections show optimistic scenarios of economic development and significant investment in the social sphere, subsequent population growth by 2030 which may result in population size of 21 580 000 people. (For details see Appendix 1)

Diseases, injuries and disabilities, untimely mortality all reduce the average duration of life expectancy. For example, male life expectancy in Kazakhstan was 61.91 years in 2008 years, i.e. men lose 1.09 years of active working life, even in the norm of retirement at 63 years. Nationally, this represents a loss of about 4 473 905 person-years of work, which hypothetically represent the irretrievable loss of 149 130 able-bodied men, in case of average 30-year period of active working life. If we consider that for 1 person-year of work in the same year each worker produced goods for about 801 727 tenge, the economic losses of country from premature death among men in 2008 amounted to more than 111.5 billion tenge (more than $792.5 million). This is the economic cost of low health capital of men and the limit of alternative cost savings to strengthen the health capital. For development of life expectancy of population from 1985, please see the Chart 1, below:

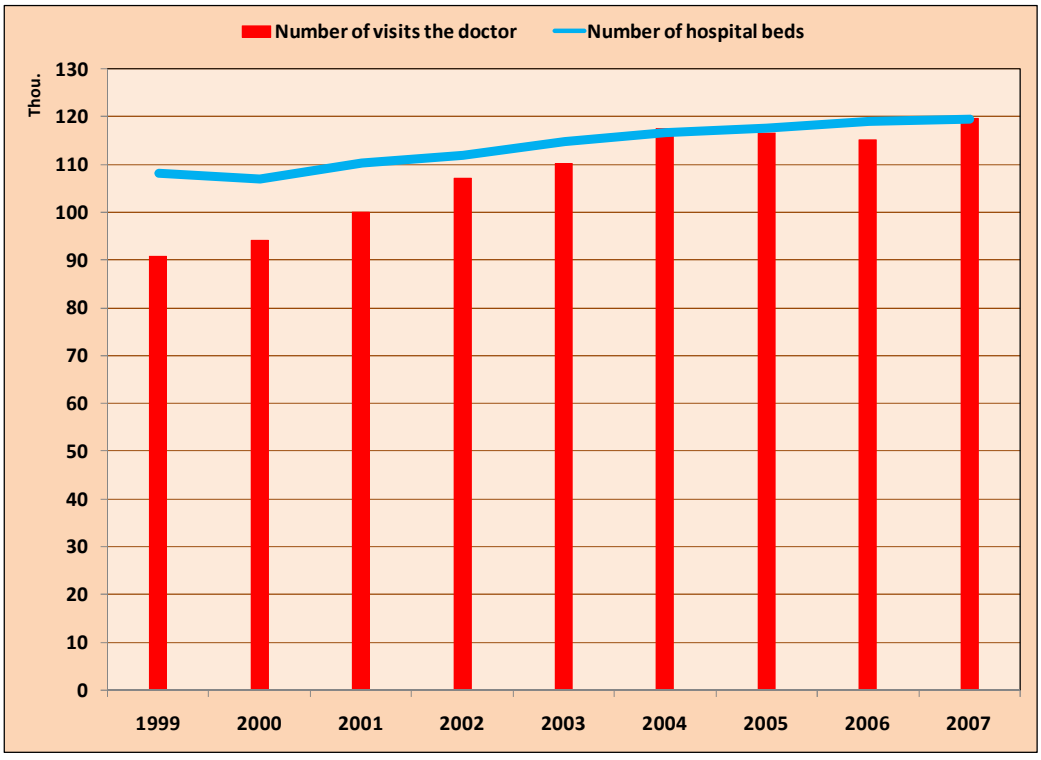
Chart 1 - Life expectancy at birth (Kazakhstan 1985-2008), both sexes



The economic damage from the diseases can be determined for each enterprise. Statistics has registered increase of sick persons who consulted a doctor in one year by 10.47% from 1999 to 2007. (See Chart 2) The lost in time due to illness averaged 20 days per year. That means the employee is not creating a product and not involved in providing profits. Moreover, he/she must be paid some sick-leave expenses, borne the cost of his/her replacement in the workplace.

In the paper "Interactive theory of the firm" V.I. Romanchin has calculated the potential economic losses for JSC «Orel Steel-Rolling Plant» (Russia). In 2003 there were working about 64 00 people. Sales volume per worker (out put per worker) amounted to about 400 000 rubles per annum or 1 600 rubles per working day; the average salary was 4 145 rubles per month. Within 20 days of illness the employee had not made the production of 32 000 rubles, and at 100% sick-leave benefit he/she was paid 3 300 rubles. Assuming that there would be 67% sick workers from total (as from Russian Statistics 2003), and then the total loss of working time amounted to 85 760 days. The potential damage, caused from poor health of workers, to the company was amounted to 137.2 million rubles. Reduced morbidity for one day provides an accretion of proceeds for 6.8 million rubles. This is an alternative assessment of health capital.

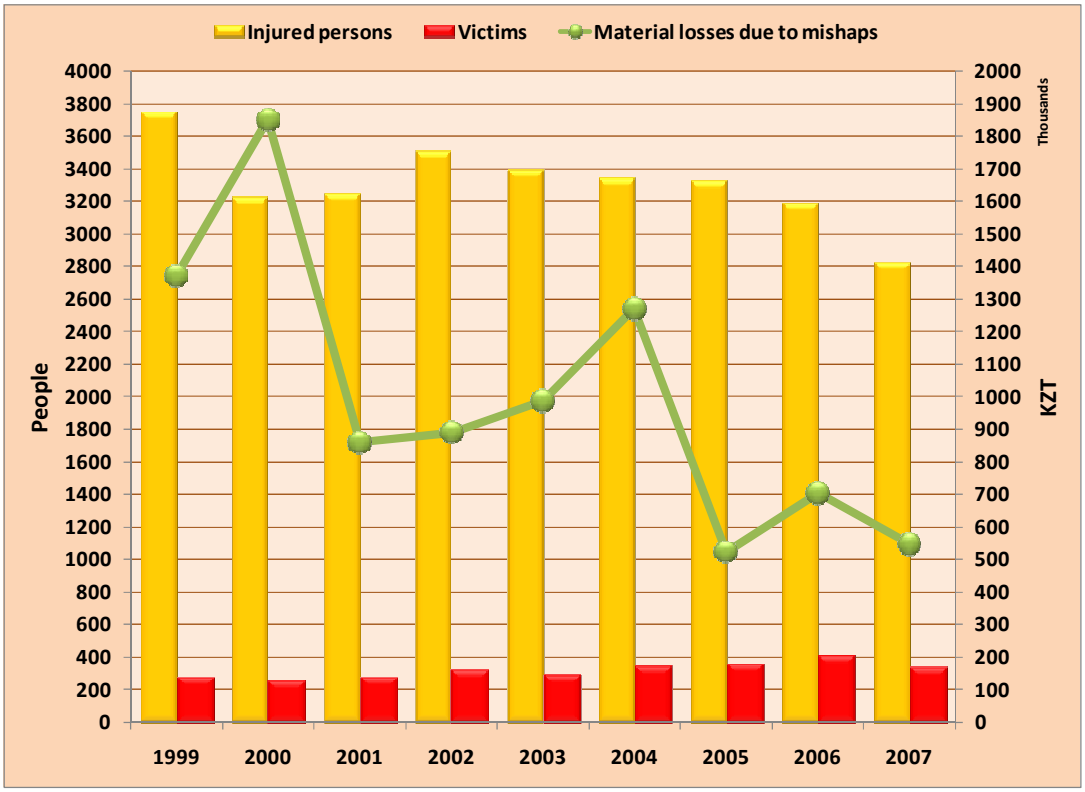
Chart 2 - Observed numbers of visits to hospital and number of beds in them



To stimulate the health capital accretion many companies use bonuses for staff to vacation pays (medical-vacation pay), who has not been sick during the year. The system of voluntary health insurance through the employer has the stimulative importance, taking into account the real savings in working time. To prevent morbidity during the working period, it is

important to reduce the share of employment in hazardous and dangerous conditions, strictly abide the safety measures. In many enterprises "economy" on safety costs of working conditions led to a doubling of occupational traumatism and occupational morbidity.

Chart 3 - Occupational traumatism and occupational morbidity



Health capital is an integral part of human capital, as investments which are expressed in preservation of workability and working efficiency due to reduction of morbidity and increasing of productive period of life. Health levels substantially depend on the quality of health services, which accompanies the human from birth until his/her retirement. Investments in health provide a normal turnover of workforce in production. The reduced health, morbidity, disability are expressed in the incapacity to work. Of course, the fewer diseases, the higher the level of health of the country and the return on investment in health.

Even though it is difficult for a country to regularly invest in health, in case of deep socio-economic crisis, we must understand that health is that vital part of human capital, which "does not understand" the pressure for money, "does not tolerate" disregard and always "revenges" on society for its irresponsible treatment. It is known that current generations bear in themselves the burden of previously accumulated pathologies. The current diseases, due to their inertial effects, will reverberate severe consequences in the future.

For a long time, spending on health in Kazakhstan accounted for 1.5% (1998) of GDP, whereas in the world they were at 8%, while in developed countries up to 10%. (Shokamanov, 1999). One of the priorities in social policy of Kazakhstan is the achievement of expenditure

levels which will ensure the sustainability of socio-demographic situation in the country. It is obvious that good health of nation is the result of deliberate and long-term health national development programs. Good health is a guarantee of longer life expectancy, higher productivity; and therefore, the expenditures on health are profitable investments with long-term and ever-increasing returns.

Labor Capital

The more complex is labor, the higher are requirements for qualifications, knowledge, experience and responsibility of the employee. As Peter Ferdinand Drucker had noted, that "business is an organization where the knowledge and qualification of its staff becomes a factor which totally determines its existence or destruction. But knowledge is a specific resource of human and knowledge can not be found in books. Only information can be found there, while knowledge and qualification are the abilities to apply information in a specific field of activity". (Zachariev, 2002)

Academician S.G. Strumilin had derived that skilled labor 2-3 times more productive than simple labor and accordingly, should be paid by tariff-scale 2-3 times higher. Investments in maintenance and upgrading the qualifications provide direct return both for workers and enterprises. (History of the U.S.S.R., 1967)

Although, there is a problem in differentiation of labor force and human capital, in our view, accretion of skills and additional productive forces of skilled labor can be converted into labor capital as a special kind of human capital. The labor capital in enterprises is embodied in skilled workers and their professional knowledge. The share of qualified workers depends on the technology used, the greater is proportion of technology the higher is demand on qualified labor of well educated and experienced employees, i.e. higher demand on labor capital. Technology improvement and transition to new technologies require investments in skill-upgrading and re-qualification. Most often we refer to the U.S. experience, where companies invest more than $30 billion per annum in on-the-job training and re-training. For example "General Electric" alone invests in labor capital more than $100 million each year. (Cray, 2009)

Unfortunately, most of the Kazakhstani enterprises economize on expenditures in human. Many enterprises have eliminated their vocational and industrial training centers which they had before; therefore they have to train their staff right at the workplace. However, the training of narrow-skilled specialists for particular industries does not provide adequate qualifications, which leads to increase in flaws, alterations, excess wear and deterioration of equipment, breakages, frequent downtimes and repair costs.

The Chart 4 presented below helps to grasp main idea about labor capital development in Kazakhstan during 1991-2007.

Charts 5-7 represent the data on occupied population in Kazakhstan by level of education. We organized the data to show the development of educational structure of occupied

population, its overall development in the period, and the share of each group in total occupied population and the changes in shares. (For details see also Appendix 2)

Chart 4 - Economically active population (Kazakhstan)

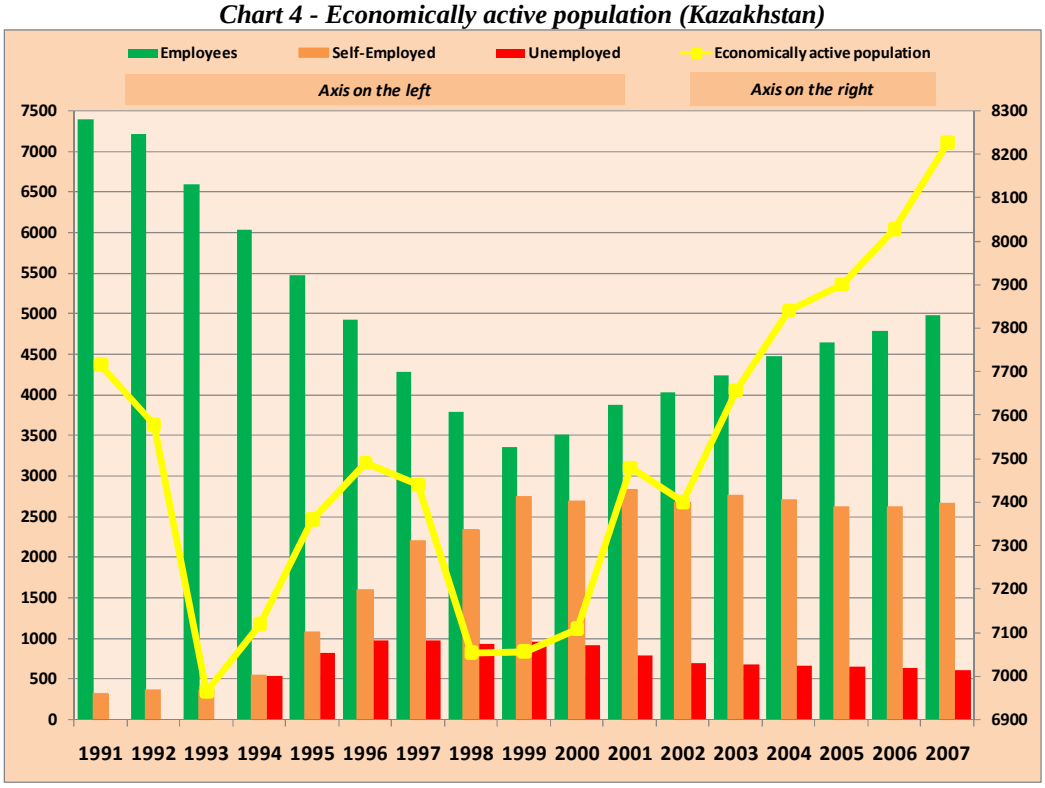


Chart 5 – Occupied population by educational level

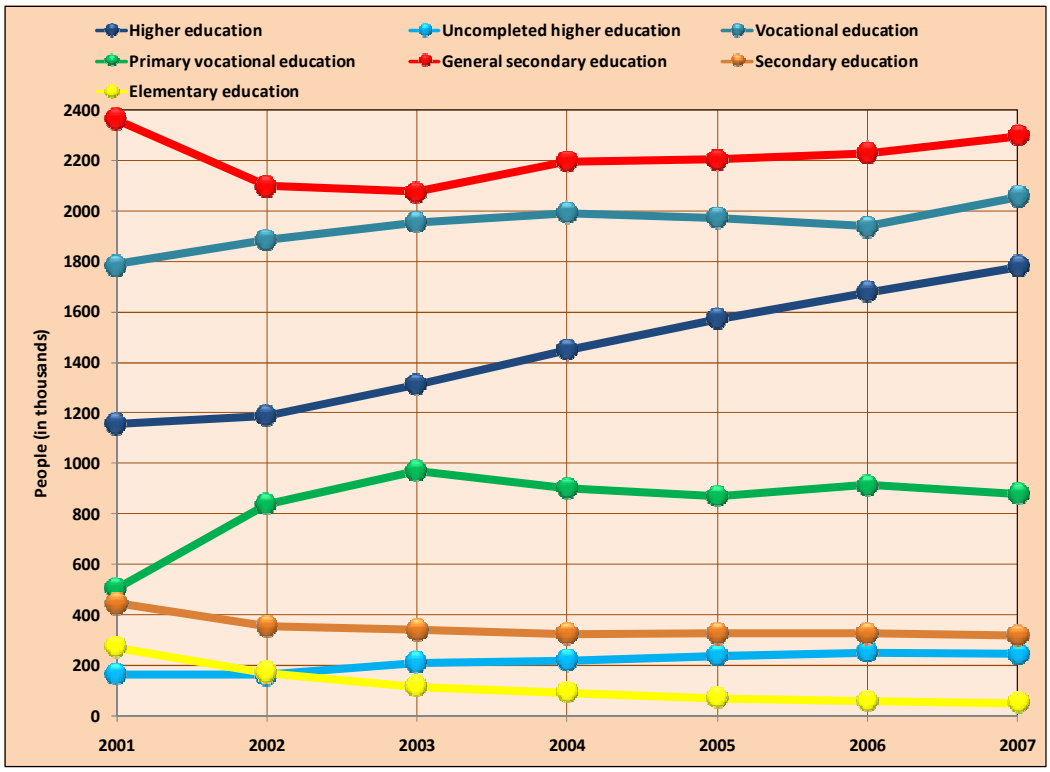


Chart 6 – Occupied population by educational level (aggregated)

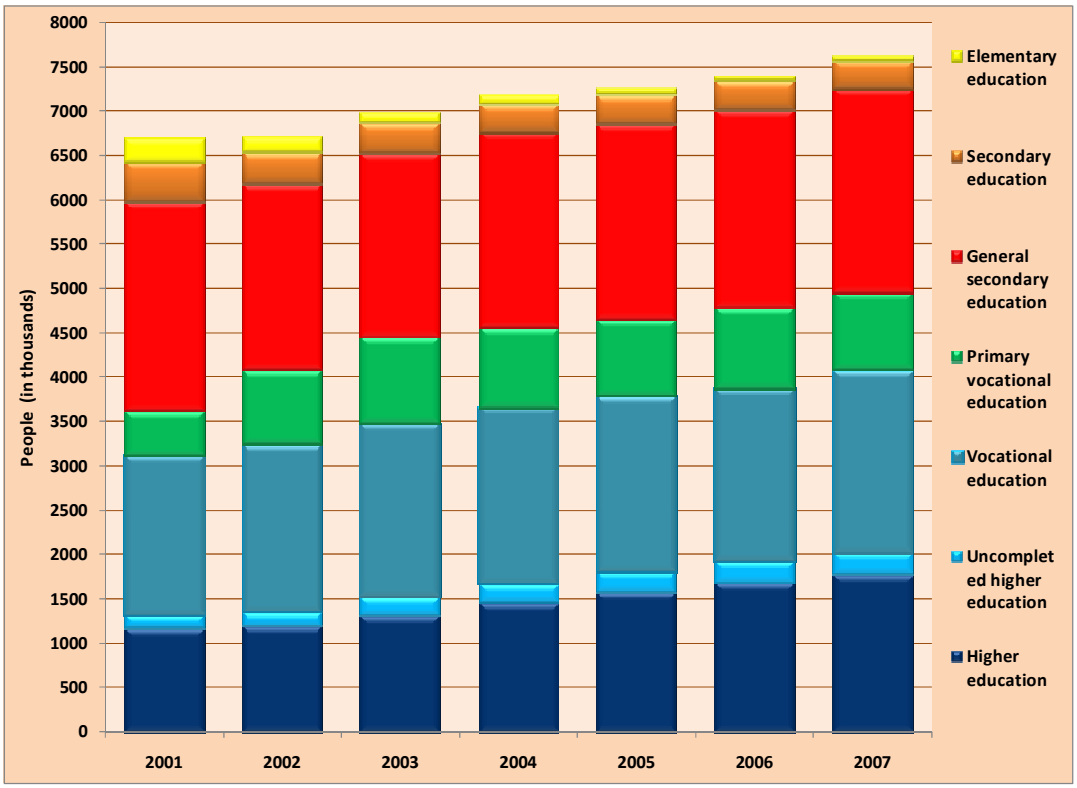
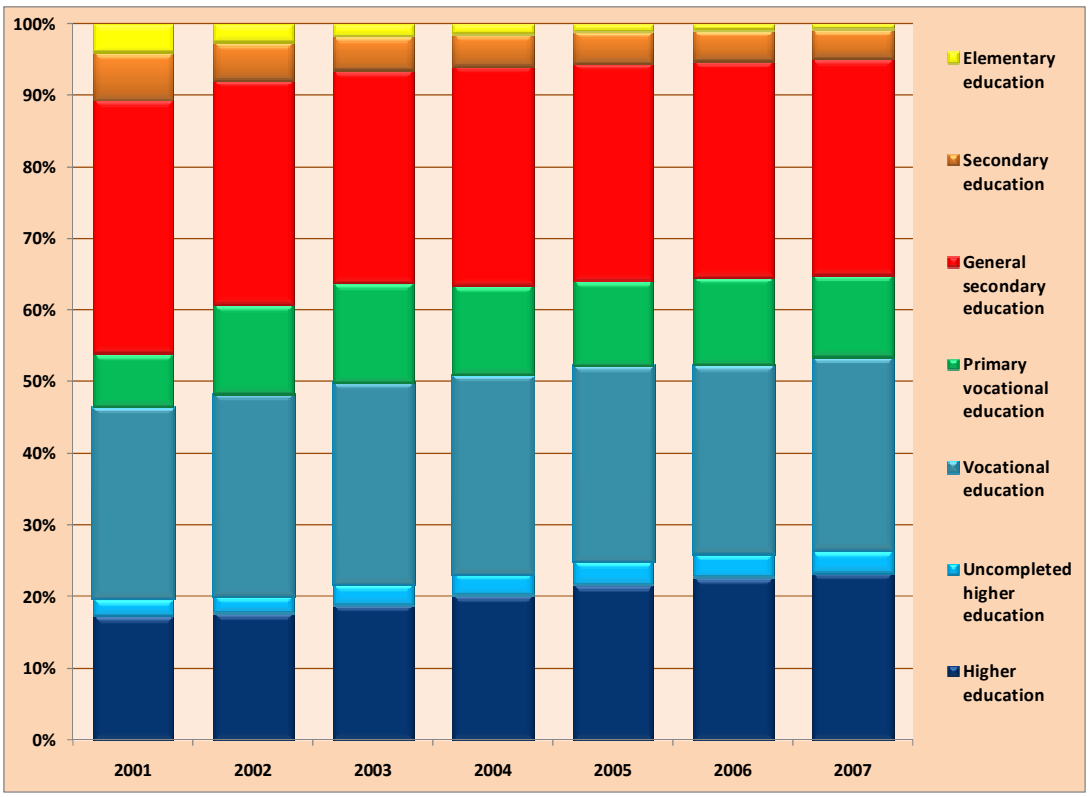
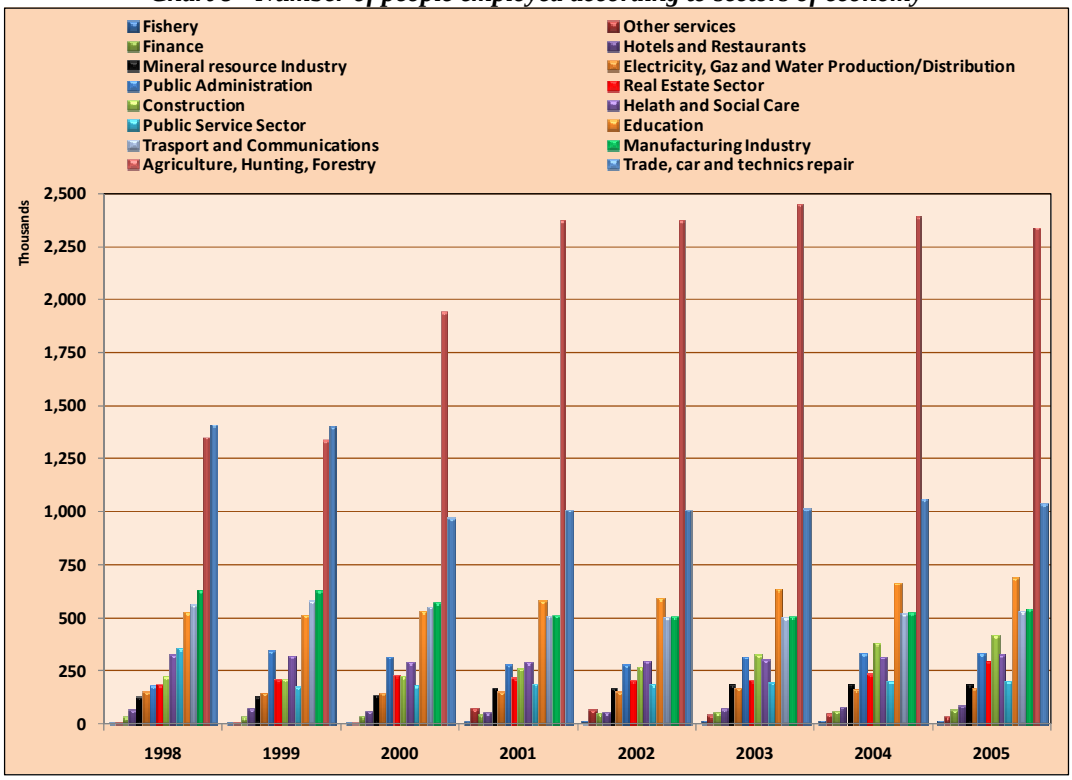


Chart 7 – Occupied population by educational level (shares)



According to the Ministry of Labor and Social Care of Kazakhstan, the current level of employment, in Kazakhstan, is unevenly excessive in comparison with other countries of transition economies, which reflects the low labor productivity. Moreover, in some sectors of economy, there is a deficiency of workforce while in the others is the excess of employment. One of the reasons for the uneven distribution of labor force is the system of university and vocational schools education, which does not meet the real requirements of economy. Another reason is the huge differences in wages which contribute to the outflow of labor force from low-wage sectors of the economy. There is a high probability of the existence of prolonged structural unemployment in Kazakhstan, in the future, unless an effective system of training and retraining will be created, in accordance with the needs of economy. (See Chart 8 and Chart 28)

Chart 8 - Number of people employed according to sectors of economy



Labor capital is formed through whole life of individuals as they gain experience, hone labor skills, possess valuable abilities and the most importantly acquire the education. Education is the main mode in the reproduction of skilled workers. Traditionally in Kazakhstan, the assessment of employees' labor potential is carried out by qualification ranks: 6, 8 and 12-ranked wage rate distributions. During the qualifying evaluation of workers the complexity and quality of work performed, as well as, the experience and responsibility for equipment and for other workers are taken into consideration.

Today, people with higher levels of education get more advantageous and more remunerative jobs. This trend of correlation between education and income of people is about the same in all countries of the world. This suggests that at the present time the providing,

getting and investing in education are very lucrative, because education directly affects labor productivity and its efficiency. In every modern society the special attention is paid to education. The qualification is an integral part of labor capital per se, which represents the degree and type of worker's professional competence. During the investing in education of the labor force, we must remember that these investments are manifold effective than investments in any other factor of production. For example, in the U.S. growth in education of the nation provides 15% increase in national income. Taking into account that the expenditures on education which makes up about 6-7% of GDP, we can easily assume that the investment in education are highly effective. (Abowd, 2002). In Kazakhstan the crisis of general vocational education is observed, which is related to the prolonged general socio-economic crisis. Increased funding for education as an investment in labor capital should remain as one of the priority goals for the country. Below we illustrate some data in charts in order.

Intellectual capital

The intellectual and creative activities are the most unique attributes of human intellect. The product of intellectual activity is copyrighted as an exclusive property of the author, who owns the rights to determine the directions and forms of its economic use. Objects of intellectual property are involved in the economic turnover as intangible assets of enterprises and increase the incomes of company and owners of these assets. The increase in proportion of high-qualified specialists in the industries and enterprises indicates the growing role of creative basis in the production process. From Chart 9 you can observe how money were spent on scientific researches and projects in Kazakhstan, as well as number of scientific organizations and the services implemented with financial outcome for the country in the beginning of the 21th century. If you add to these numbers the volume of services by individual freelancers, the actual size of activity, predominantly, by intellectual labor will be equal to the size of industrial activity in Kazakhstan.

Most of the scientists recognize the crucial role of human's intellectual activity. Indeed, the intellectual products may be formalized as an intellectual property and included in economical and business transactions in the form of intangible assets, investments in basic capital and license buying and selling. Observed increase of the share of intellectual labor in Kazakhstan in professional system gives grounds to optimistic estimates associated with the reproduction of intellectual capital and general human capital. Increase in the contribution of intellectual capital is provided by the persistence of a comparatively large number of researchers engaged in scientific development in Kazakhstan. In 2008, 16 304 persons were employed in science, 10 780, of them, were researchers, including 1191 doctors and 2861 candidates for science. For all the justified criticism of the shortcomings in development of science in Kazakhstan during the first years of independence, it should be noted that craving for the creative activity, still, had been kept on high level. In 7 years (2000-2007) the gross expenses on

scientific researches and projects had increased in 6 times, the active involvement of doctorate students and their increase in number by 2.8 times. The role of intellectual capital in enterprises can be assessed by investments in R&D. In Tables 1-3 we can learn basic trends in development innovative sector of the country.

Chart 9 – Expenditures and benefits related to scientific activities in Kazakhstan

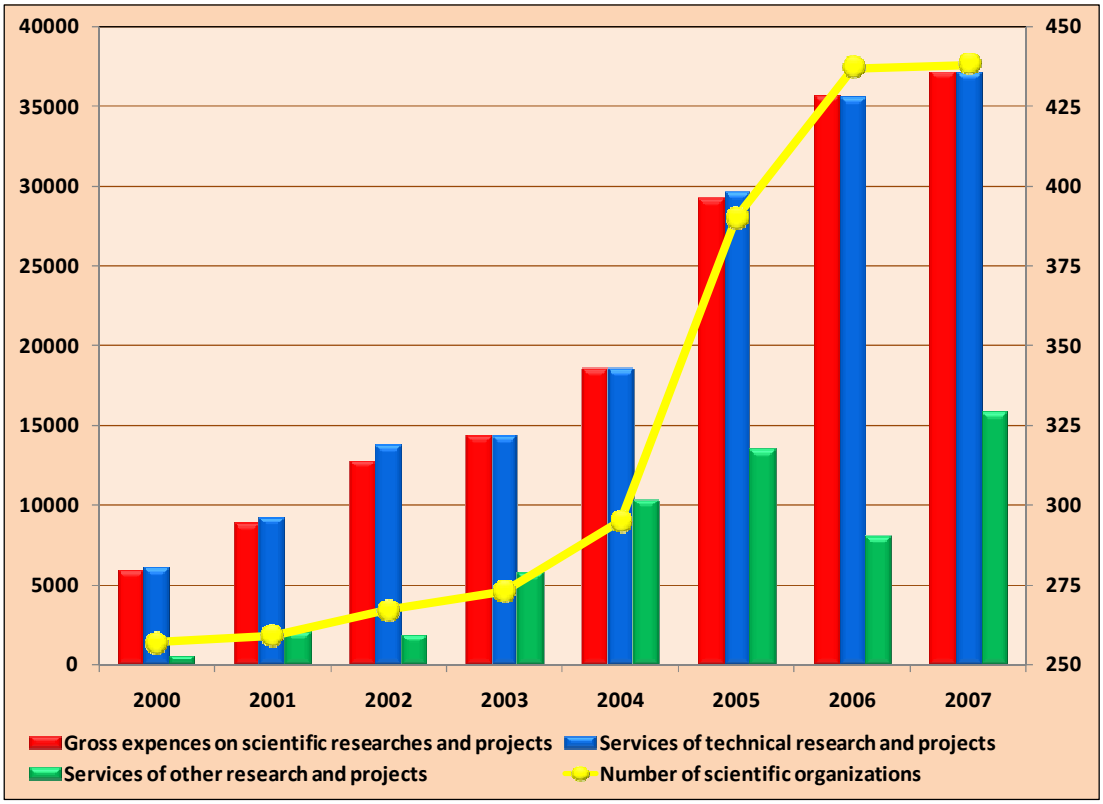


Table 1 - Number of people engaged in researches and projects

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
All officers engaged	14756	15339	15998	16578	17343	18912	19563	17774
Researchers engaged	9009	9223	9366	9899	11010	11910	12404	11524

Table 2 - Indicators of innovative activity in Kazakhstan

	2003	2004	2005	2006	2007	2008
Volume of innovative products (million KZT)	65020.4	74718.5	120408.4	156039.9	152500.6	111531.1
Volume of innovative products exported (million KZT)	43945	48076	65686	81150	82842	-
Share of enterprises with R&D departments in (%)	5.03	5.77	6.51	6.84	7.01	6.67
Level of innovative activity (%)	2.05	2.29	3.39	4.77	4.83	4.00

Table 3 - Innovative activity of industrial enterprises in Kazakhstan (2008)

	With innovations	Without innovations
Republic of Kazakhstan	208	5,662
Foodstuffs production, including drinks and tobacco	41	1,058
Textile and clothing industry	4	354
Production of leather, leather items and shoe making	2	29
Woodworking and production of wood items	4	171
Pulp-and-paper and publishing industries	10	1,224
Coke, petrochemical, nuclear materials production	6	16
Chemical industry	26	186
Rubber and plastic industry	14	464
Production of other non-metal mineral items	20	546
Metallurgy industry and production of finished metal products	24	484
Mechanical engineering	24	382
Production of electrical and optical equipment	19	266
Production of transport facilities and equipments	7	137
Other sectors of economy	7	345

Achieving the technological and organizational advantages over possible competitors is one of the main functions of intellectual capital. The definition of intellectual capital has a quite general nature and usually means the sum of the knowledge of all employees of the company or country that provides its competitiveness.

The intellectual capital as a form of human capital has acquired its relevance rather recently. Intellectual capital becomes apparent especially during the activization of innovative processes at enterprises. As we noted earlier, in modern world people with more knowledge and information, take a more favorable places in life. The material production concedes to an expanding service sector. Investments in intellectual capital are becoming more common due to its high efficiency. Highly talented researchers and scientists earn high income from intellectual property. This sphere of economics is currently developing very rapidly and is very promising and highly profitable branch of economic activity.

On current stage of technological development, the intellectual capital appears with an intensity that allows us to talk about the fundamental difference between the new economics from the industrial economics, based on natural resources and on the labor of the so-called “industrial personnel”. Intellectual capital is formed and develops on the basis of interactions and synergies of its two detached parts: (1) knowledge which is embodied in people and actively used; (2) the objects of intellectual property or copyright.

Intellectual capital represents one of the core components of the general human capital value. Intellectual capital is one of the main constituents of human capital, whenever we want to estimate the human capital. The main value of human capital based on intellectual aspect of the population. The concept of intellectual capital and the related concept of intellectual property

are inseparable from the new economics. These are the most essential components, which identify the new economics.

Cultural and moral capital

Another valuable asset which compounds an important part of human capital, and acts as premise for successful human capital acquisition is the cultural capital. The cultural capital is the linguistic and cultural competence of human, the wealth in the form of knowledge or ideas that legitimize the formed social statuses and official power, maintain the established social order and existing hierarchy in a society. Cultural capital of an individual is characterized by following parameters: intellectual culture (intellectual capital), educational culture (educational capital), moral and ethical culture (moral capital), symbolic culture (symbolic capital), social culture (social capital).

The cultural characteristics of the individual have a value assessment: qualitative and quantitative characteristics of knowledge, skills, moral and ethical qualities, abilities, life style, social relations of the individual and a set of costs relating to the development of the cultural characteristics of an individual. High culture and morality of human are also needed in the production process as well as skills and intelligence. Medical ethics, educational and business ethics, code of honor of the businessmen, labor and consumer morale create a healthy moral-psychological climate in and between staffs in the companies and entire country, increase labor productivity and incomes. The reputation of employee as well as image of company is equally important to attract customers and investments, alongside with the purely businesslike characteristics of entrepreneurship. The business honor, the conscience, the honesty and the responsibility are highly valued in political, economic and business relations. That is why the cultural and moral capital must be considered as a special kind of human capital in all sectors of human's activity.

However, the cultural values embodied in people as well as the culture (as a set of stable forms of social interaction) per se, do not directly represent the human capital. They represent only a potential manifestation of human capital. The active use of human's cultural potential in the process of social action (i.e., in the action which, by supposed purport of an actor or group of actors, is correlated with the actions of other actors and relies on them") is not necessarily actualized as a human capital. This important transformation can be achieved only through continuous and special social action, which allows an individual to become the subject of labor and take appropriate place in professional field which corresponds to his/her cultural level which by-turn allows to obtain not only a social and professional status, but also access to additional income which excess the costs connected to the simple reproduction of the employee and his/her family. Only under certain circumstances, during the active use, the cultural values embodied in human are transformed into cultural capital changing his/her professional status.

The cultural use-values can be transformed into cultural capital, only if they are interwoven in such social relations where they become a source of economic power of their owners over the other participants of social interaction. Therefore, the embodiment of human characteristics in the form of cultural capital is carried out within the social relations in social reproduction and through the system of rationally and socially intelligent human activities, i.e. "accessible for understanding". The certain level of rationally intelligent action, with the aim to obtain benefits, shows up a social embodiment of human's properties and characteristics in the form of human capital. Human capital, per se, intrinsically, is the humans' aggregate capacities and abilities to reproduce certain actions under the certain conditions, on the certain level of effectiveness, benefits and income. The external manifestations of the intelligent realization of human's cultural capacities and capabilities in the form of human capital can be interpreted as "rational obviousness".

The category of cultural capital in social sciences designates the set of intellectual abilities, education, skills, integrity and qualification of an individual and individuals, which are used in the process of social activity and in the legitimization of social status and social power possession. The assessment of individual's maturity degree and the level of cultural capital can be implemented through different ways. Mostly the methods of cultural capital assessment are developed in social psychology and theories of labor motivation. In the human resource theories, there is an approach based on qualitative characteristics of employee's behavior and reputation with fixation of facts of his/her deviant behavior, such as violations of labor and technological discipline, unmotivated conflicts detrimental to the production process and other negative misconduct.

All these types of human capital, mentioned above, have one thing in common. They are inalienable from the human. However, components of human capital are heterogeneous, and lately there had been a number of works that brought out new forms in the structures of human capital which may be alienated from the human personality. These new forms include social capital, structural capital, institutional capital, etc.

Social capital

Social capital as scientific category is now increasingly recognized in the scientific literature. "Social capital can be defined as a set of social relations, which minimizes the transaction costs of information within the entire socio-economical relations, throughout the networks, society and economy." (Kritsky, 1995) Social capital is linked to the fact that each social agent in some extent is included and integrated into a system of social relations. This is a capital of communication, collaboration, cooperation, mutual trust and mutual support, which is formed in the area of interpersonal relations.

Social capital is defined as "the characteristic features of social life (cooperation, norms and trust) which enable participants to operate effectively together to achieve common goals".

The World Bank gives the following definition: “Social capital refers to social institutions, relationships and norms that shape the quality and quantity of interactions between people in society...” “Social capital is not simply the sum of the institutions which underpin society; it is the glue that holds them together. The World Bank also notes that social capital can be represented as a set of horizontal links between people. They include social contacts, and related rules that affect society, productivity and welfare. (The World Bank, 2009)

All the factors that create the possibility of the origination and development of social relations and ensure their preservation have direct relationship to social capital. Practically, the major portion of our intellectual potential is composed of the knowledge which is transmitted by society and acquired in the process of socialization and integration into the system of social relations. This knowledge characterizes the social qualifications and the learning process and self-development through the establishment of new social ties, creating new structures within the society. This process provides the integration of individual experiences of humans into universal social experience. Thus, social capital can be characterized as the knowledge which is transmitted and developed through the relationships between employees, partners, suppliers and customers. For possession of social capital, human must be connected with others and these others are the actual source of his/her advantages. Natural resources and technology used in countries can be unchanged, while their social capital can grow with the development of external relations and image of the country.

Social capital has specific features: (1) it is always the product of organized interaction, so it has a social rather than individual nature. “In contrast to financial capital, which resides in people's bank accounts, or human capital, which is embodied in individuals' investment in education and job training, social capital inheres in the structure and quality of social relationships between individuals.” (Portes, 1998); (2) social capital as product of organized social system operation occurs as a public property. However, despite this fact every individual can benefit from the effect and degree of social capital, and this collectively owned social capital somehow becomes a part of human’s individual assets.

Social capital is created through the exchange of knowledge, and this requires the existence of a common organizational environment, where such exchange could be freely and continuously carried out.

“Social capital is indeed a form of capital. As a form of capital it can create some inertia in an economic or social system. Accumulated social capital can help form costly links; it can also become an incentive for players to stay in costly relationships. When social capital is taken into consideration, links that seem irrational when examined in one period may be perfectly rational when the history of the link is taken into consideration. Social capital is more simply defined as the value of social obligations or contacts formed through a social network.

A considerable controversy has appeared in the literature over the use of the term 'capital' in category “social capital”. Portes elegantly posited the location of social capital in

relation to other forms of capital: whereas economic capital is in people's bank accounts and human capital is inside their heads, social capital inheres in the structure of their relationships.

Schmid identified that capital is not immediately used up in production but rather its services extend over time. The capital stock is subject to investment for future production and depreciation and decay from both use and non-use. The main difference is that more than one person benefits from social capital (Schmid 2002; Schmid 2000).” (Claridge, 2004)

“Many authors have questioned and even attacked the appropriateness of the term capital in social capital. Smith and Kulynych (2002) believed that the word capital has a too broad, pervasive and honorific meaning and that the term blurs many distinctions which adversely affects the scholarly inquiry, whatever its implicit or explicit normative concerns.

Inkeles (2000, p. 20) suggested that the term capital is too limiting and would rather use the term social or communal resources. The author argued: capital being an element of production, in particular the production of goods, but also services. We want not only goods and serves but also social support, physical and social security, freedom of expression, opportunities to develop ourselves and a host of these outcomes not captured by the idea of goods and services.” (Claridge, 2004)

“It is interesting that the term capital should be used with social, considering capital is already a social relation. In the original sense of the word capital, an object is only capital under particular social conditions. In the same way the sources of social capital are only capital under particular social conditions.

Some scientists think that the idea of social capital is still in its early stages of conceptualization and there are still many problems with the current conceptualization. Social capital theory suffers from much criticism for being poorly defined and conceptualized. This problem largely stems form the fact that social capital is multidimensional with each dimension contributing to the meaning of social capital although each alone is not able to capture fully the concept in its entirety (Hean et al. 2003).” (Claridge, 2004)

Organizational capital

“Organizational capital, which can be considered as a type of social capital, is a concept that has been used primarily by economists to denote the productive capacity that derives from the qualities of an organization's "people relationships." Social capital, on the other hand, has been used, typically by economic sociologists, not simply to refer to productive capacity but more generally to denote a social resource that enables actors to attain their ends.

The concept of organizational capital was developed by John Tomer in his 1973 Ph.D. thesis and later as an article and book (1981, 1987). Working separately, Edward Prescott and Michael Visscher (1980) also wrote about "organization capital."

Investment in organizational capital uses up resources in order to bring about lasting improvement in productivity, worker well- being, or social performance through changes in the

functioning of the organization (Tomer 1987: 24). It involves (a) changing the formal and informal social relationships and patterns of activity within the enterprise, or (b) changing the individual attributes important to organizational functioning, or (c) accumulating information useful in matching workers with organizational situations. This third aspect is the one on which Prescott and Visscher focus.

Organizational capital is embodied either in organizational relationships, particular members of organizations, the organization's repositories of information, or some combination of the above. Pure organizational capital provides the best contrast with human capital because it is vested entirely in the relationships among workers, not in the workers themselves. It is these relationships, for example, particular organizational structures, that enable desired worker behavior to be evoked or fostered.

The organizational capital concept has great value in that it links organizational behavior insights regarding the contribution of organizational structure, culture, climate, patterns of interaction, socialization, etc. to the economic concepts of capital and productivity. The organizational capital concept has found useful application as (a) an explanation of the rate of economic growth, (b) a factor explaining increases in worker effort levels and cooperation and thus X-efficiency, and (c) a factor in understanding the high productivity of Japanese manufacturing companies as well as other high performance companies (Tomer 1987). Organizational capital has important implications for industrial policy, that is, for understanding when government ought to act to foster industry investment in critical types of organizations. Investment in organizational capital can also contribute to increasing an organization's socially responsible behavior, the rationality of its decision-making, and the citizenship behavior of its members." (Tomer, 2007)

Structural and Institutional capital

We decided to put these two types of human capital in one paragraph, since they represent relatively similar area of human capital operation and functioning on almost the same scientific commonplace.

The competitive environment in modern economy is continuously changing under the impact of innovation. High speed of such changes complicates conditions under which country can succeed. One of such condition is the presence of significant *structural capital* in country. Structural capital is the ability of country to manage its organizational and governmental structures, conforming to the changing socio-economic and political environment and at the same time changing it in a favorable direction for the country. This capital is greater, the greater the freedom of citizens of the country (the carriers of human capital).

Institutional capital represents institutions that promote the efficient creation, storage, reproduction and use of all types of human capital in social environment. Institutional capital is a systematic competence of the country or the systems reinforcing creative performance and

institutional capabilities for creation products and values. Institutional capital is the knowledge of institutions in the country. This is not the knowledge of individual employees. Institutional capital can be described as embedded knowledge or institutionalized knowledge which can be stored with the help of information technologies in accessible and easily expandable databases. (Schneider, Means, 2000)

Well-developed structure, not only helps society in better implementation of set goals, but also becomes a very important intangible asset necessary for success in development of the society. While the well-developed system of institutions in the structure as well as the level of interaction, integration, transparency and availability of various institutions are another advantageous conditions for effective development too.

Thus, the human capital can be described according to following sets of interaction which represent the main characteristics of its components in overall structure of population quality. (See scheme on page 37)

In table we can see a classification of human capital formed by levels and types of property of human capital and on the basis of combining different approaches. This classification of human capital allows us to consider and assess the human capital at the micro level: individual human capital, meso level: human capital of the organization and macro level: national human capital.

In the structure of individual human capital we can single out health capital, cultural and moral capital, labor capital and intellectual capital. In the structure of company human capital the avowed assets of the individual human capital (patents, copyright, know-how, etc.) play a special role, intangible assets of company (trademarks, brand marks, copyrights, commercial experiences, etc.), organizational capital, structural capital and institutional capital. National human capital includes the political capital, national intelligence priorities, national competitive advantages and human potential of the country, the level of social cohesion etc.

Based on different typologies and classifications we can distinguish following components in basic elements of human capital structure of each individual:

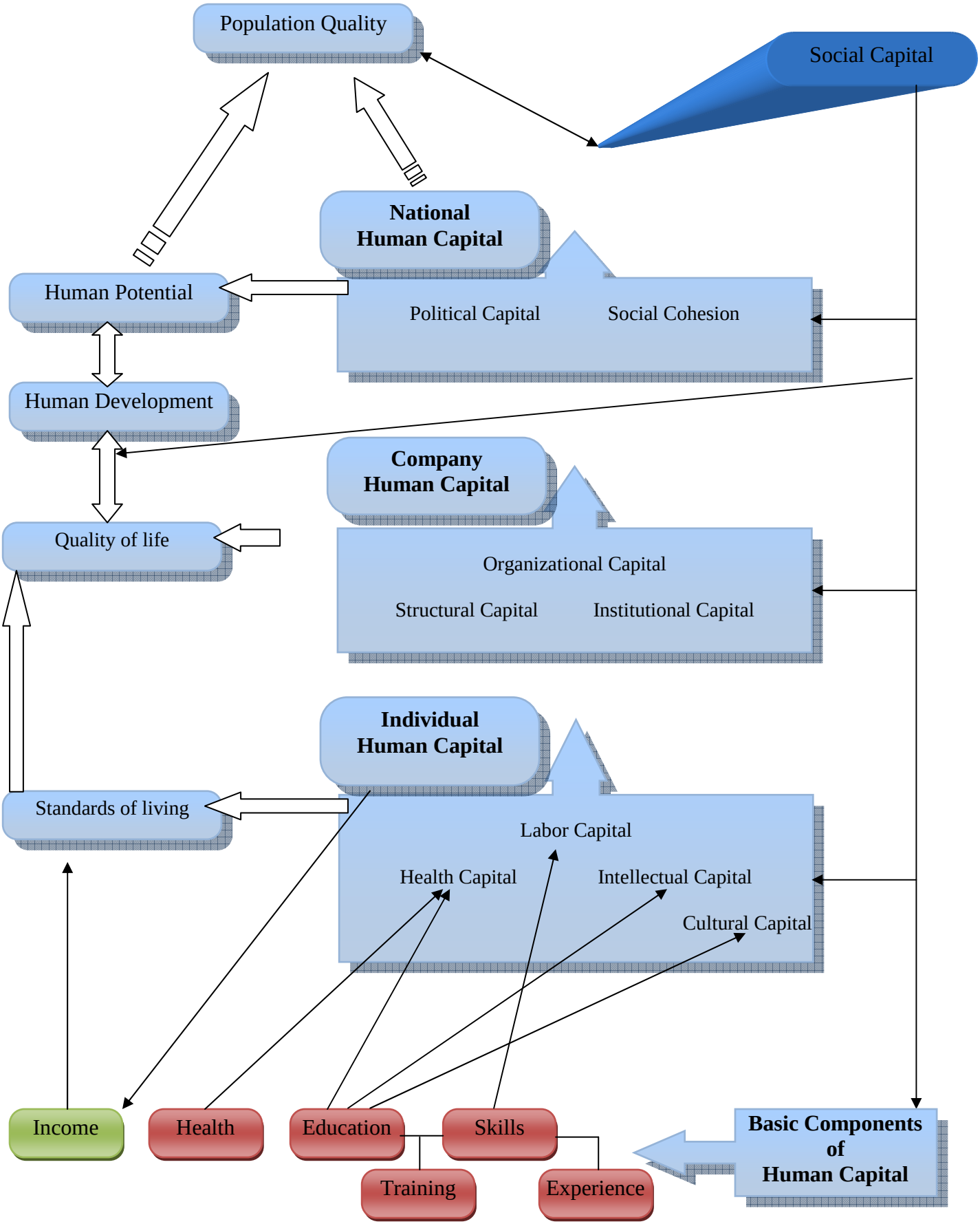
a) knowledge: the appropriate form of information used in social activities, which enhance effectiveness;

b) ability: the art to carry out any activity successfully;

c) experience or skills: workmanship to perform specific labor operations for a long time;

d) culture: principles and patterns of behavior within the existing knowledge, rules, traditions and moral in society;

d) motivation: activity orientation, intensity, satisfaction with process and results.


Population Quality
Social Capital
National Human Capital
Human Potential
Political Capital
Social Cohesion
Human Development
Company Human Capital
Quality of life
Organizational Capital
Structural Capital
Institutional Capital
Individual Human Capital
Standards of living
Labor Capital
Health Capital
Intellectual Capital
Cultural Capital
Income
Health
Education
Skills
Training
Experience
Basic Components of Human Capital

2.3. Factors and cycles of human capital formation and reproduction

The issue of human capital is widely discussed in the scientific, applied and academic literature. Human capital as a scientific category has become one of the core concepts in general thoughts about human and society, allowing the description and explanation of many social processes in the light of human interests and actions. The composition of the productive forces and capital, education and income distribution, economic growth and national wealth are adequately reflected in social science with the use of category “human capital”.

The discoverers of human capital as a holistic concept: T. Schultz and G. Becker focused on investments in human capital and assessment of their effectiveness. This is understandable, since exactly the investment funds transform resources into capital, making from a simple welfare a capital-welfare. Investments in human capabilities lead to increased productivity, increased income, including the increase in earnings of employee. So, there is a reproduction and the cumulative accumulation of income through human capabilities which make a special form of capital from these human capabilities. The use of human capital increases not only the earnings of employee, but also the profits of enterprises and the country.

Numerous statements of the founders of human capital theory come to the fact that people increase their capacity as producers and as consumers by investing in themselves, while significant increase of investments in the human, changes the structure of his/her income. Therefore, human capital represents not innate, but accumulated properties of human. Human can not be born with a ready capital. It is necessary to create it in the life process of every individual. The innate properties can act only as factors which contribute to the productive human capital formation.

In classical economic theory the reproduction was understood as consecutive changes of movement phases and cost forms of the product. Production-exchange-distribution-consumption as transformation phases of material form of the product of labor is characterizing the life-cycle of material production. During the production from raw materials the useful product is created. During the exchange, in the presence of labor division, the product is exchanged for other useful products. Proceeds from sale of goods (income) are distributed pro rata the needs of indemnification of capital, payment of staff salaries, payment of taxes, savings and payment of revenue to owners of capital. Actually, this is the main stages of any reproduction process.

In essence, the human capital can be ascribed to more qualitative type of capital. It is characterized by the universality of coverage, embodied scientific information in it, in contrast to the physical capital. The knowledge of many human generations, embodied in human capital, gives it a universal character. Its properties are constantly accumulating, updated and enriched. The quality of human capital can be conceptualized as a stable set of properties of its components, which form professional, qualifying, intellectual and cultural abilities, constantly

enriched during the accumulation of knowledge, cultural skills and other abilities and which provide the growth of labor quality. (Abuev, 2007)

Individual human capital formation is carried out in the fields of education and upbringing of the younger generations. Reproduction and accumulation of human capital is provided in the period of active employment. The formation and reproduction of specific types of individual human capital is accomplished through some forms of human activity with the help of sectors and institutions of social and informational services. The formation, reproduction and accumulation of human capital are directly related to functioning of social sphere of the economy. Therefore it is important to take into account the particular traits of society transition into the innovative track of development with priority development of social sphere.

The formation of human capital begins with the birth of human and continues throughout the life. Health, knowledge, abilities, experience, culture are accumulated and act as a certain stock or capacity, which demands the preservation and reproduction. Human capital is formed by individual and is inseparable from a human personality. Only the products of intellectual and physical labor can be isolated and alienated, while the intellectual and physical abilities and needs of the individual hardly can. Hence, the reproduction of human capital is inextricably linked with human activity per se, and with the phases of human's life.

The first life cycle of the individual human capital formation takes up the first six or seven years of life. In this period, parents are fully responsible for upbringing of children and their "normal" (within norms) development. The government assists in education of children through the municipal network of nurseries and kindergartens. In this period the formation of the musculoskeletal system, the biochemical mechanisms and all subsystems of the organism as the foundation of health and strength are elapsing. At this age, the human masters the basis of culture and communication norms: language, speech, basic life principles of behavior and communication. In the same period the perceptional and sensory world, psychomotor reaction and the nervous system stability are formed.

From age of 7 to 17-18 years, the children study in school. The purpose of general education in terms of human capital is to build the foundations of cultural and moral capital, to identify and capture individual abilities and orientations of children. General secondary education provides basic level of knowledge in the fundamental, social and humanitarian sciences. Without this basic knowledge it is practically impossible or difficult to obtain further professional knowledge, especially in professions of highly skilled workers, specialists and managers. During the same time the socialization of the individual, the recognition of civic rights and responsibilities and the desire to live according to norms of social morality and rules of the community, are completed.

The acquisition of vocational education through apprenticeships and industrial training, vocational and graduate schools becomes one of the major life cycles. Education and practice form a qualification, labor capital, professional abilities to perform specific work at specific jobs where professional knowledge and skills are brought up to higher levels.

In charts 10-16 describe the changes in numbers of educational institutions during last two decades in Kazakhstan.

Chart 10 – Preschool organizations (provided places for children)

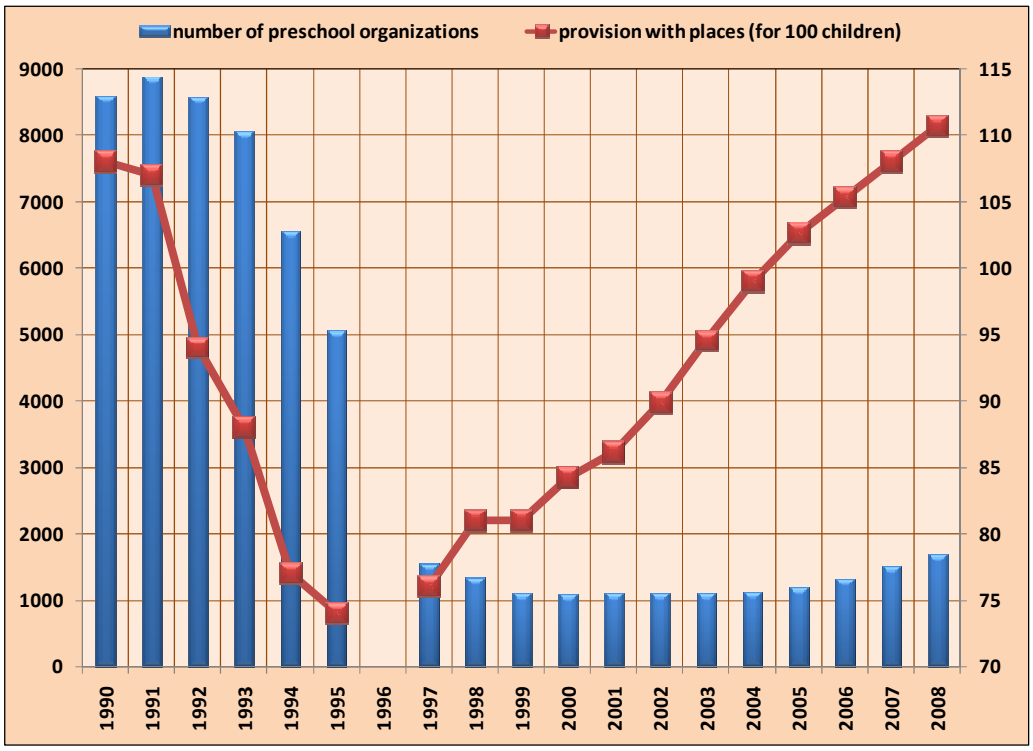


Chart 11 – Preschool organizations

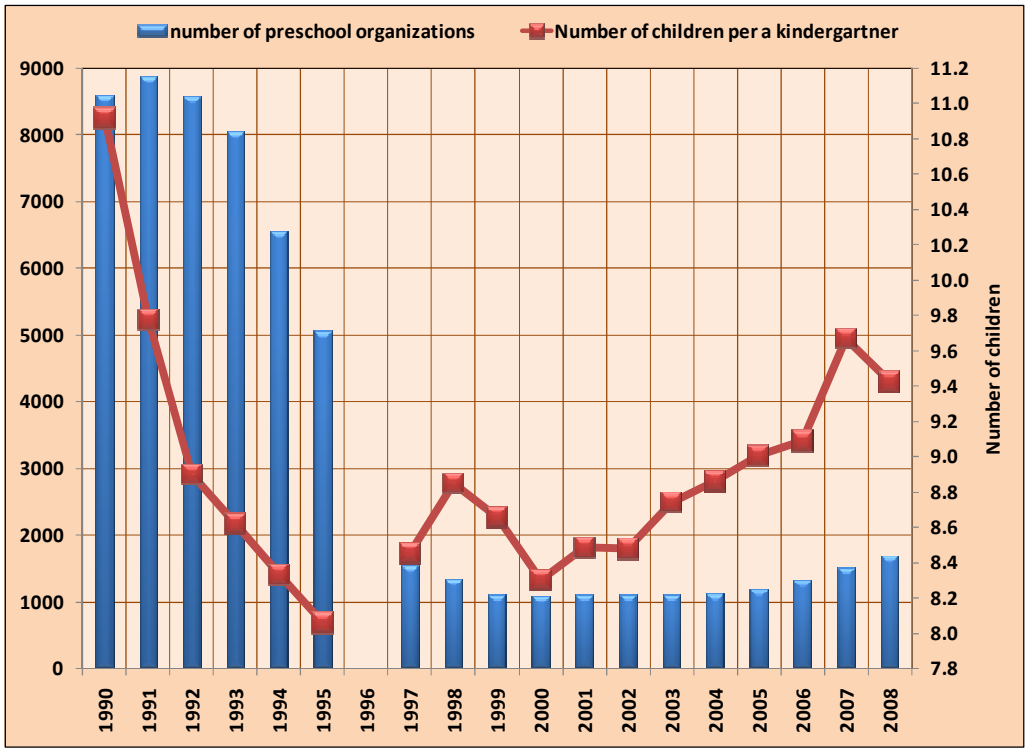


Chart 12 - Schools

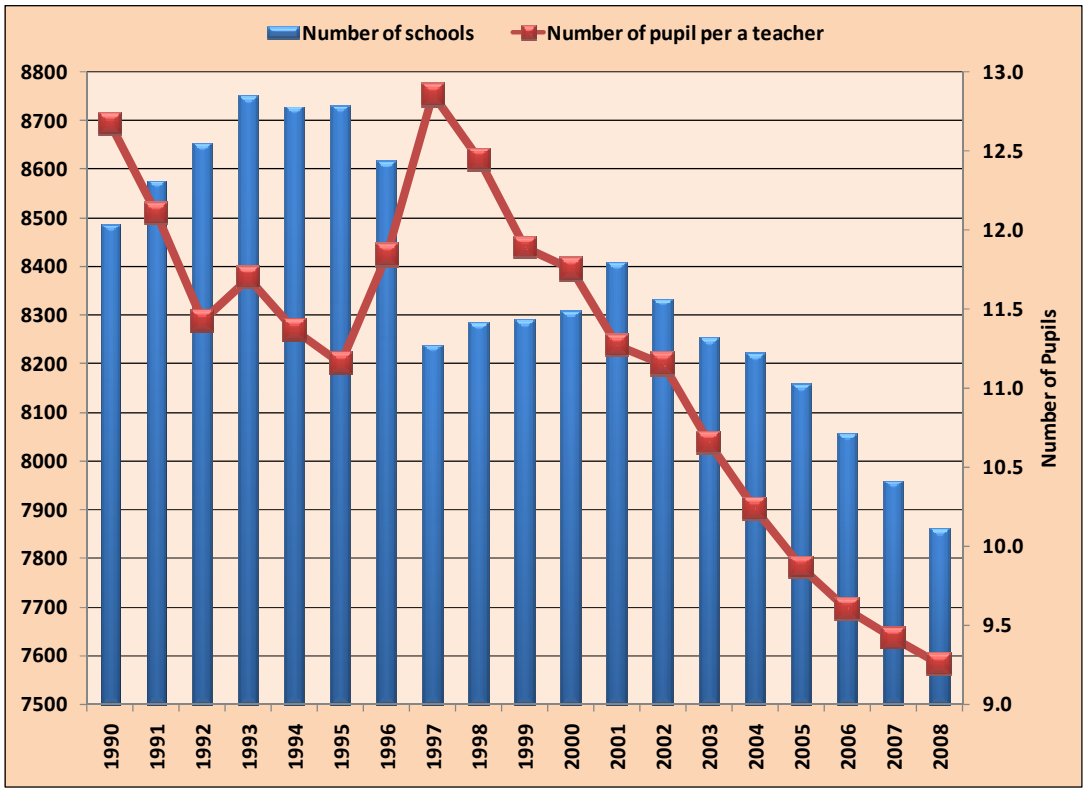


Chart 13 – Professional schools

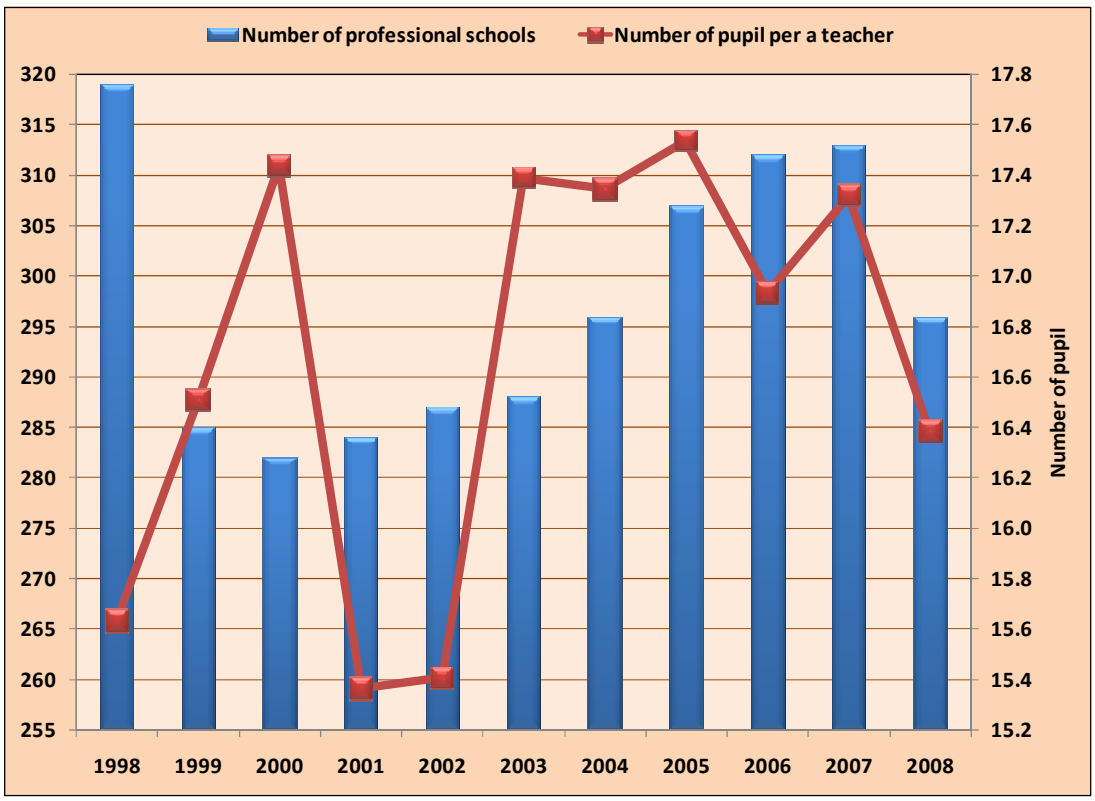


Chart 14 - Colleges

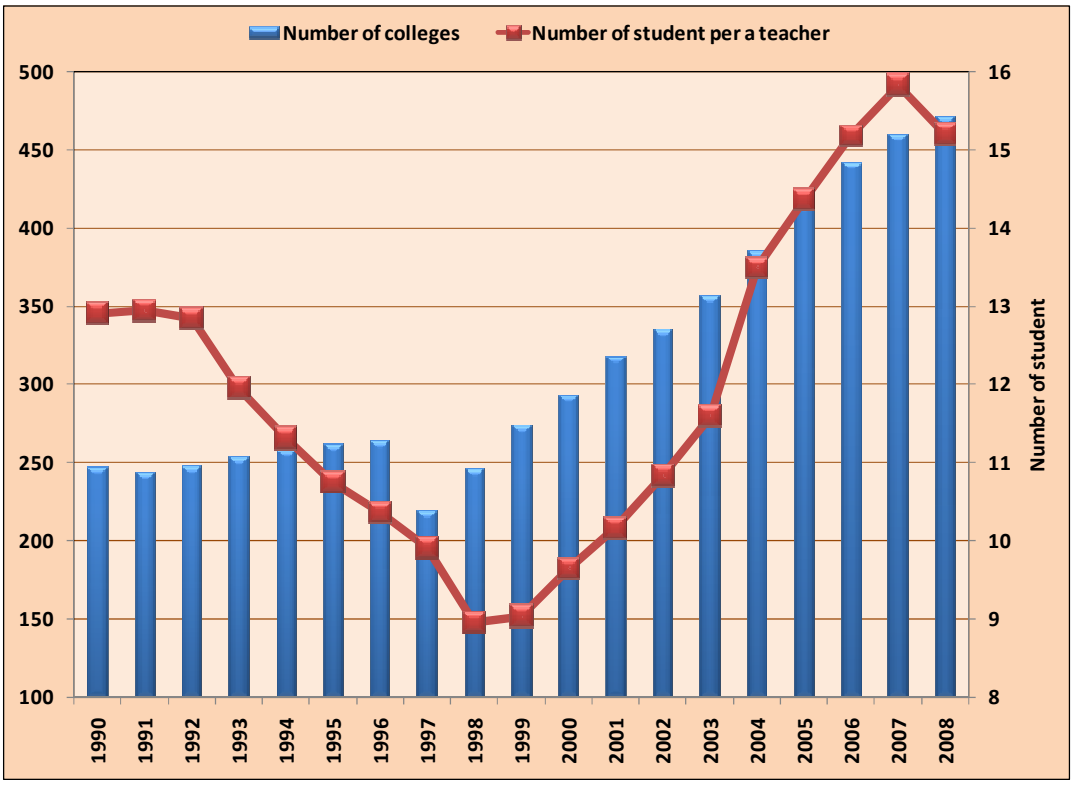


Chart 15 - Universities

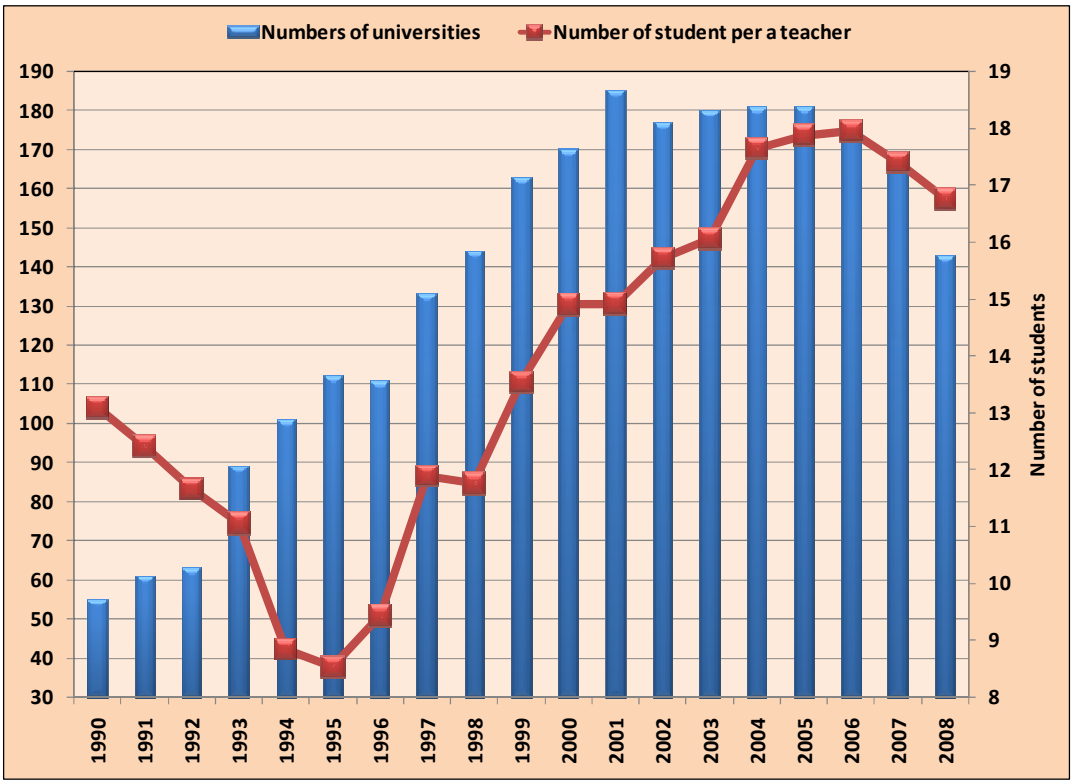
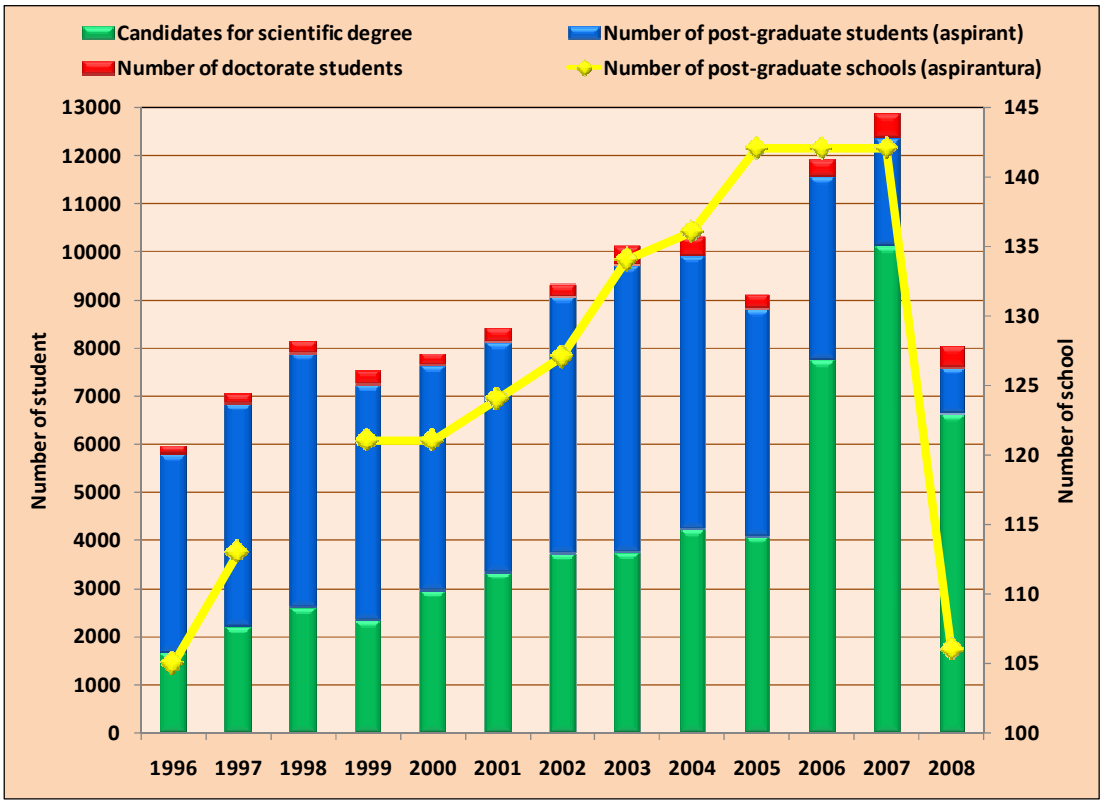


Chart 16 – Postgraduate organizations



The main forms of human capabilities development are education, health, social mobility. Investments are the main source of the formation and accumulation of human capital. The effectiveness or return on investment in human capital depends on both the industry and enterprise, in which it is used, and the personal motivation and responsibility of human. Subjective and objective factors determine the terms of use, economic and social effects of human capital overturn. It is necessary also to take into account the special features in formation, accumulation and reproduction of individual, company and aggregate (national) human capital, as well as the specific conditions of their use and non-use (the degradation and depreciation of human capital is possible, for example, in periods of unemployment and social disorder).

Production of human capital, its distribution and exchange for revenue and consumption, as well as return rates provide some new information on human capital movement, but unfortunately they do not directly and unambiguously explain the nature, the purpose and the motivation of human's decision on self-development. The same limited "mechanistic" analogies become apparent, like during the most frequent comparisons of physical and human capital contents. However, we think that the specificity of the nature and the role of human capital are more significant, diverse and complex. It is necessary to look for new methodological approaches and principles describing the reproduction of human capital in

the modern economy, which may help in further detailed and objective typology of human capital.

During examination of particular factors of human capital reproduction it is useful to take into account that empirical studies do not allow distinguishing the persistent strong influence of any single factor on the differences in education at all levels. But nevertheless, there are some observed interactions of various factors during the process of human capital reproduction. In the most general terms, the volume of costs for human capital production in economic theory includes the following components: (1) direct costs, including tuition fees and other costs on education, residence and work change; (2) loss of earnings, is an element of opportunity cost, as access to education, residence and work change associated with the loss of profits; (3) other opportunity costs, based on the concept of time-value, as individual could choose other forms of time-spending instead of investing it in human capital.

The most important criterion, which expresses the essence of any capital, is the value of its accumulation. All accumulated resources (pecuniary, material, informational, etc.) from which income is derived, in all cases represent a capital. In intensional view the human capital includes the stock of health, knowledge, skills, abilities, which are capitalized under the following conditions:

1) flow and cumulative stock of human abilities according to the phases of life;
2) expediency of using the ability stock, which leads to increased productivity;
3) increase in labor productivity naturally leads to an increase in earnings of an employee;
4) increase in income motivates the employee to make additional investments in his/her human capital, amass it cumulatively (Flannery, 2007)

This accumulated human capital is represented as the stock of health, labor and intellectual abilities, commercial secrets and know-how. The productive use of human capital generates income and profits both, for individual employee and for company, as well as for a country as a whole.

However, the character of human capital can be non-homogenous. G. Becker indicates the existence of heterogeneity of human capital. He thinks that one individual can possess many human capitals at once. He wrote: “a major assumption has been that all human capital is homogeneous, an assumption that conflicts with obvious qualitative differences in types of education, on-the-job training, informal learning, etc. in the same way that the frequently used assumptions of homogeneous physical capital conflicts with myriad observed differences in plant, equipment, etc. The advantage of “heterogeneous” assumptions is that by sweeping away qualitative detail – detail that, incidentally, has received excessive attention in the literature on human capital – one can concentrate on more fundamental relationships in human capital. For those unable to accept, even tentatively, an assumption of homogeneous human capital let me hasten to stress that different kinds can rather easily be incorporated into the analysis. The only significant new parameters introduced are those giving the correlations between the different supply and also between the different demand curves for the different kinds of capital. It should

be intuitively clear that positive correlations tend to make both earnings and investments more unequally distributed and skewed, for then persons who invest much (or little) in and earn much (or little) from one kind of capital also tend to invest and earn much (o little) from the other." (Becker, 1993).

The recognition of heterogeneity of human capital was an important step in the development of human capital theory, which led to understanding of differences in the rates of return. Also, recognition of the role of the so-called "non-productive labor" (work in the social sphere, as well as the production of services) in the process of human capital formation and in reproduction the foundations of national wealth in the country, also became important transitions in understanding of human capital phenomenon. For centuries, the labor devoted to child-rearing, health and education were considered as "non-productive" jobs and were not given an "honor" to be an object of economic analysis. Still, there is prevailing view that the schools, kindergartens, hospitals, sport-clubs, rest-homes and sanatoria, museums and libraries, theaters and houses of culture, other social enterprises are "non-profit" and "non-productive" organizations with excessive burden on the budget at any level. All this are delusions of utilitarianism and mercantilism. Meanwhile, the social services reproduce the main wealth of the society and every single individual, they create the human capital. The work in social sphere of economy is productive in its nature. Its main objective is the formation, accumulation and reproduction of human capital, which are currently the main productive force of any society and the most important factor of economic growth. Three hundred years, economists have studied mainly the reproduction of material wealth, and services began to be studied only in recent decades. It is necessary to recognize the role and importance of services in the life sustenance. It is important to understand the characteristics of services as a special product with special technology in organizations of social enterprise, since the area of services is the right field where intangible types of the capital are created.

As we see, human capital has life cycles of reproduction of health, knowledge, skills, occupations and professions, scientific discoveries and innovations. However, the cycles of human capital reproduction do not show themselves in a strictly defined and consecutive order. We can talk about general cyclicity when there are changes in the dynamics of human capital development. It is impossible to predict with absolute certainty, when similar change take place in the future, but you can say that this change will happen for sure.

2.4. Measuring human capital

Nowadays the problem of measuring human capital is increasingly coming to the fore of understanding of features and mechanisms of human capital. However, the common principles in calculation of this complex indicator have not been elaborated yet. Some studies have already developed the most important principles of unified calculation of its separate components such as the life expectancy of one generation, the active employment period, the net balance of the workforce, the cycles of family life, earning functions etc. The value of rearing and education of new employees, along with advanced training, the lengthening of employment period, the loss due to morbidity, mortality and other factors, etc. have been recognized as essential elements, during the process of human capital assessment. Currently, the idea of "lifetime education" becomes widespread in the world. In Kazakhstan the system of “continuous education” is insinuated.

The estimates of cost in country, families, enterprises and various funds allow the determination of current annual total costs of the society on human capital reproduction or alitor, the investment in people. The changes in types of skilled workers reproduction were established due to demands of scientific and technological progress and rapid development of science. Such significant changes in characteristics of humanity development demanded a clarification of information about reproduction of the aggregate worker and his/her participation in economic processes. Most of the researchers consider necessity of regular assessment of the educational level achieved by different groups of workers, as well as, by the whole country. This allows an establishing the dependence of production results from such an important factor as education.

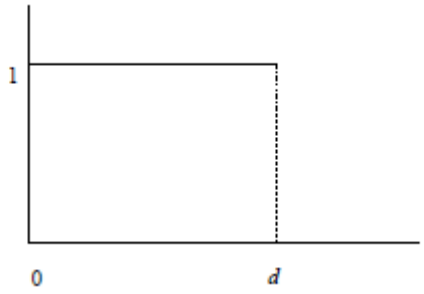
“American economists on the basis of census data and various surveys, for the 1980's, have concluded that the average length of personnel training which was needed for secondary special education was 13-14 years. Family and country had spent approximately $350 000 for preparation of employee. World Bank used this assessment as guidance in determining the values of human capital indicators for the estimates of national wealth.” (Piskunov, 2006)

Today, the comparatively sufficient conditions have been established and the extensive information in the databases of international organizations for experimental evaluation of the human capital indicators within the concept of national wealth has been accumulated. Such monetary assessments are important for measurement of the actual volume of current savings, as well as aggregate savings in the society for the whole cycle of reproduction of the national wealth. So, as we see the different methodological approaches can be applied during carrying out practical calculations of the human capital indicators based on the concept of national wealth.

American economist John W. Kendrick suggested using the “perpetual inventory method” in determining the accumulative value of the investment in human. His methodology

was expounded on the basis of detailed statistical information concerning the United States. This method is acceptable for statistical estimates for the countries with long-term dynamic series of the accumulation and consumption structures. Kendrick's assessment technique determines family and society costs on maintenance of children until they reach the working age and get a particular profession, retraining, professional development, labor migration, health, etc. Along with these costs the investments in housing, in household durable goods, in stocks of family goods, as well as the costs of research and development are taken into consideration. These specified aggregate costs of families and society are summed for a mid-period of labor-force preparation. Using deflator index the exponents of values are converted from the current year in comparable prices, on date when human capital is assessed. (Kendrick, 1997)

"Perpetual Inventory Method (PIM) for the calculation of the stock of fixed assets whenever direct information is missing. The calculation of consumption of fixed capital can be based on these stocks of assets. Besides net capital stock, which appears in the balance sheets can be derived within a PIM approach. Using the PIM, gross capital stock is calculated as the sum of gross fixed capital formation in previous years, of which the service live is not yet expired. In the simplest case it is assumed that the total investment of a particular asset does not deteriorate during the expected service life of that asset and is discarded as a whole after that period of time. That is, denoting the expected service life of an asset by d, an asset lasts exactly d years (See figure)



$$GCS_{t,t} = \sum_{i=0}^{d-1} I_{t-i} * P_{t-i,t}$$

of which:

GCSt,t = stock of fixed assets (gross) in year t in prices of year t

It = gross fixed capital formation in year t in current prices

Pt-i,t = price index of year t with base year t-i

d = expected service life

Calculations using the PIM result in a gross capital stock by the end of an accounting period." (Meinen, Verbiest, Wolf, 1998)

According to PIM calculations, the share of human capital in accumulated national wealth of the U.S. (excluding government investment) in 1970 was more than a half. Thus, Kendrick derived the estimates of human capital accumulation in its full "replacement cost". As for methodologies of assessing "net value" of human capital, they still need additional studies and researches, because now there are no satisfactory evaluation methods of depreciation or obsolescence of human knowledge, production skills, etc. So, what part of the cost for reproduction of human capital is used in "real accumulation"? The World Bank specialists have proposed the "genuine savings" indicators, which value approximately the half of total human capital cost in country. (The World Bank)

National Bureau of Economic Research (NBER) developed this topic and held discussions on the role of human capital in economic growth and methods of its evaluation. General conclusion of the discussions was reflected in two working papers: one was represented by Jacob Mincer, "Human capital and economic growth" another one by Casey Mulligan and X. Sala-i-Martin "A Labor Income Based Measure of Human Capital".

J. Mincer in the evaluation of human capital accumulation presented the data on the employee's total income for the period of his/her participation in economic activities and the use of these incomes for reproduction of labor power. Using statistical data for the U.S. in 1980's he traced the action period of human capital and its effectiveness change depending on the number of general education and vocational training years, as well as the age of worker. (Mincer, 1981)

Mulligan and Sala-i-Martin in their paper had proponed the methodology of measurement of total stock of human capital through a system of indices. Their estimation is based on average timing of education and training of workers in the U.S. according to censuses. They also have noted the differences in the productivity of workers, depending on the quantity, quality and duration of labor. They concluded that the level of employee's income is directly related to the amount of accumulated value of human capital and knowledge. (Mulligan, 1995)

Researchers came to conclusion that employees with higher levels of education and training require less cost per unit for sustaining their families than others, because their work more efficient. A higher level of human capital accumulation is observed among workers with higher education and qualification which enables them to have a high level of income and more often be involved in different training programs, etc.

The U.S. Bureau of Economic Analysis (BEA) under the direction of Carol S. Carson, together with experts from the OECD for a long time were developing a system of scientific and technological advance indicators, including the costs of "research and development" (R&D). The concept and methodology for estimating the volume of total expenditure on R&D was presented in the "Frascati Manual", which became an international standard, which is used for comparative analysis of the scientific research results in many countries. The BEA experts have

also developed a methodology for estimating the current R&D expenditures and their accumulation as intangible capital and as an important factor of economic growth. BEA methodology is based on information which is available for the United States concerning detailed information on expenditures on science since 1920.

The proposed methods, surely, contain a lot of conditional assumptions in the rearrangements of statistical values, especially during calculations with constant prices for such a long period. Conditionality can be found: (1) in the magnitude of the lag between the period of implementation of R&D and the period of their realization in the accumulated human capital as an increment in stock of knowledge and skills; (2) in determination of mean lifetime of this type of capital (approximately 18 years) and the average age of this capital. The values of the residual value of such capital in R&D, estimated by other researchers are close to estimates of the BEA, J. Kendrick and other researchers adhered to the OECD standards. Such calculations were carried out by following scheme (Kendrick, 1997):

1. Current expenditure, total, including fundamental and applied researches and designs.
2. Accumulation per period.
3. Changes in stock.
4. Consumption for current period.
5. Gross accumulation.
6. Net accumulation.

It is clear that the use of such estimation methodologies of human capital accumulation is possible only with detailed statistical data, which many countries, including Kazakhstan, do not have. However, the experience in methodological development by U.S. scientists' estimation of R&D definitely assists in solving the complex problems associated with the assessment of human capital of population in Kazakhstan.

World Bank suggested the major unified principles of national wealth concept, which create preconditions for improvement of estimation methodology of human capital indicators. Thereby several methods for estimating the value of accumulated and used human capital and its intellectual component were developed:

1. *Expansion concept* excels in relatively simple use of available statistical data on GDP, as well as their rearrangement and value specification of investment indicators in human capital and accumulation of national wealth. The methodology summarized the experience of above mentioned methods for assessment of human capital. This methodology allows for well-grounded and more reasonable estimation of human capital values as an element of national wealth. Herewith, the knowledge gained through effective participation in economic life and labor remuneration (the income earned) is taken into account. The estimations of such indicators are quite accessible for experts in most countries, and provided by statistical data reporting, results of sample surveys, expert assessments and other fragmentary information.

2. Method of “investment estimates”, based on the calculation of investment and term-wise values of all costs on formation and use of human capital.

3. Method of “reproduction estimates” assumes the estimation of cost on formation and use of human capital adjusted with the norms of its accumulation and real reproduction overturn.

4. Method of “innovation estimates” considers innovation upgrade cycles of vocational and qualification parameters of human capital, which are adequate to cycles of scientific-and-technological advance and to renewal cycles of physical capital.

5. Method of “return estimates”, since human capital is one of the forms of capital (it is a source of future income and can be accumulated), rates of return are applied in analysis of its effectiveness, which are calculated by appropriation of the human capital income to its cost.

Nesterova and Sabrianova proposed the standard model of human capital estimation for post-communist Russia, which includes following variables:

1) rates of return on investment in human capital, which are calculated based on the Mincer’s earning function. Here, the earnings of an individual acting as the dependent variable and represented in logarithmic form;
2) number of schooling years (or education level);
3) potential experience in the labor market;
4) professional experience at current workplace. (Nesterova, Sabrianova, 1998)

Estimated human capital in almost all countries of the world exceeds the half of accumulated national wealth. This shows the differences in the levels of development as well as in material well-being. However, high proportion of human capital in most of the countries is conditioned by extremely uneven distribution of natural resources in the territory and their insufficient research. Unfortunately, in Kazakhstan, the estimated share of human capital is one of the lowest due to the high proportion of natural resources value in national income.

2.5. Human capital as a demographic category:

2.5.1. Evolution of the population and human's role in economic relations

With the growth of technical equipment of work, the structure and content of functions performed by a human in production process had undergone significant changes. Historically, the first stage of the technological development had been hand-tools, by means of them human was operating on the subject of labor. The labor functions of the worker had a relatively stable nature, organically ensuing from the natural human capabilities. The leading role in the work was played by skills acquired through many years of productive experience and retained throughout whole life. Therefore, the creation of "ability to work" did not require stupendous time costs. With the transition to mechanized production had arisen a need to separate the functions of creation and implementation of means of labor. Machine creation had become a more complex process, and the implementation of this process could not be based just on practical experience of producer. This had been requiring some theoretical knowledge. The contradiction between intellectual activity and labor was resolved by a separation of creation and use of means of labor, i.e. the separation of applied science from production. With the accomplishment of such division the work started to be carried out only as a direct labor, and the worker became an adjunct of the machine. With the growth of technical equipment of work and complexity of machines the structure and content of functions performed by human had changed substantially.

At the upper stage of comprehensive mechanization all the functions of physical labor are performed by machines, the human has only the functions of machine management. This process requires a qualitatively new abilities as well as polytechnic and complex knowledge. The system of education and its separation from immediate labor helps to resolve the contradiction between immediate and intellectual labor. With the development of automation not only the functions of physical labor were devolved on machines but also the functions of management of these machines. Human became freed up from participation in the production process, and became a regulator of this process. In this case, the decisive role is played by the level of general, polytechnic and special knowledge. Such changes in work functions show an increasing share of intellectual labor work costs, saturation of immediate labor with intellectual activity and with functions of creative character. Doubtlessly, such labor requires the huge accumulation of knowledge and information, tremendous long-term input to work. The aim of this new kind of labor, which considerably excels from physical labor, becomes an innovation. The priority in such innovation based economy is set to the accumulation of intangible and intellectual properties, where the intellectual properties are considered as the major factor in the establishment and development of high technology.

All the new means of life activity are based on science, education and production, so they become possible on the basis of two related forms of accumulation: non-material (knowledge, skills, experience, and culture) and material. Currently, the non-material accumulation (human capital) affects all aspects of life activity through the influx of new scientific and technical knowledge, innovations, know-how and professional development of employees, along with development of general culture. The wider the spread of new scientific knowledge, the more it is embodied in the professional qualifying potential of employees, the higher the proportion of high technological products, the better the return on investment in human capital. The non-material (intangible) accumulations generate significant multiple effects.

Since the second half of 20th century the rate and efficiency of economic growth started to be determined ever more by the level of worker's self-development and accumulated human capital. Several scientists, mostly in economic sciences, had noted that since the early 1960's the process of gradual transformation of industrial labor force into postindustrial (innovation) labor force had began, which has highly developed informational needs and capabilities realized in the form of innovative human resources.

With transition to innovative economy a new form of wealth came into existence, transforming its entire structure. The quality of human capital and the degree of its involvement in social production have a direct impact on the level of national wealth. The volume and structure of national wealth is one of the main characteristics of society, which determines the economic power of a country. The innovative economy is understood as the economy, where fundamentally different way of managing is dominating i.e. innovative, relating to the development of all sectors and spheres. The essence of this principle consists in radical change in considering science and education as main sources of various innovations. In an innovative society, the creative structure of productive forces of society and human are actualized increasingly in the form of human resources. In an innovative society, the individual is not simply "economic human", who refers to a set of economic functions and roles that define a rational human behavior in the economy of industrial type, but he/she becomes multifaceted human personality as a decisive factor and the main resource of innovation-based society.

At the stage of innovative economy development, the knowledge forms the majority of value in products and services created by society. In innovative economy the activities associated with production, storage, transmission, and using of knowledge acquires considerable importance. A special role in these activities belongs to the education, the character and significance of which are changing at the greatest degree. In innovative economy of postindustrial society the investments in human capital become a leading factor of economic growth and competitiveness of national economy, company and individual. Innovative economy pushes aside the issue of property ownership in its traditional sense and puts a premium on intellectual property. This is supported by the fact that the majority of companies in Kazakhstan during transition to private ownership do not always faced an economic growth, because the

majority of human capital owners remained aside from these important processes. In our opinion the main means of solving this problem in Kazakhstan is not only the creation of private owners' class, but also the mobilization of accumulated national human capital.

When traditional resources and sources are about to exhaust the economic growth is ever more provided by the use of innovative resources, the main carrier of them along with material factors becomes a human with high level of education, scientific and special knowledge. The wealth of the country is created by productive labor of its citizens. Economically developed countries are characterized by high and sustained rates of economic development, what have ensured comparatively high employment rates, rising incomes and consumption per worker. The latest trends of socio-economic development show that there is a need to identify new priorities and criteria in interpretation of a new concept of capital, which would summarize the main features of highly developed modern society. This need is clearly reflected in the evolution of theory of capital per se.

Human capital theory studies the process of qualitative improvement of human resources, forming one of the central sections of the modern analysis of labor supply. Real revolution in labor economics was originated with promotion of this theory. The most important features of this revolutionary approach are:

1) identification of "capital investment" aspects in the behavior of market agents;
2) transition from current indicators to the indicators which covers the entire life cycle of employee (such as lifetime earnings);
3) recognition of human time as a key economic resource.

Human capital theory has suggested a unified analytical framework for explanation of such, seemingly, various ordered phenomena as the contribution of education to economic growth, the demand for health and education services, the age dynamics of wages, wage differentials of male and female workers, the transfer of economic inequality from generation to generation, fertility patterns resulting on family and etc.

In modern conditions the complex of productive capacities and needs of human is established in the form of human capital, which is transformed into a set of creative innovative capabilities and needs which are specific to the innovative stage of social development and functioning in the form of innovative resources. Innovative human resources are an adequate form of expression of the essential human's creative powers to innovative stage of social development. This form is included in the system of the innovation-based economy as the main factor in ensuring the high quality and dynamism of social and economic progress of a society.

"The relationship of economic growth with human development is much more complicated and does not lie on the surface of socio-economic development of society. In early 1970, the UN Economic and Social Council (ECOSOC) had systematized and summarized proposals of demographers, sociologists, economists, ecologists and other specialists, and had prepared a paper on strategies for further development of humanity. The conceptual position of demographers were dominated, especially one of its key positions concerning the role and

importance of human factors in global economic development." (Abuev, 2007) In accordance with this approach, a human stands in the innovative economy, not only as a means but also as the final aim, as resulting outcome of social and economic development. Socio-economic progress is the progress for human, the movement of human to its highest historical goal, the free and creative realization.

"Currently in developed countries, there have been changes in the objective conditions of reproduction. The changes of priorities in development were evinced by strengthening of target orientation to comprehensive human development, to meet his/her ever-growing needs. Investments in human capital in the "golden billion" surpass the investments in the material sphere now. The cost of education, health and welfare several times exceeds the investments in physical capital. This outstripping allows the optimization in solution of the problem of limited resources. The governments of countries, where new conditions of economic progress, prescribed by informational revolution and innovation were recognized, have ensured the welfare of their citizens." (Abuev, 2007)

The proposition about strengthening of state role in the formation of human capital is confirmed by practice of developed countries. The scientific and educational spheres become a leading sub-system in the development of innovative economy. These spheres are functioning with the aim of formation the new means of life activity intended for establishment of creative, innovative, active and competitive human. The scheme of sources and logic of economic growth have changed fundamentally in the new society. The growth of size and quality of health and social services, education, intensification of research and innovative activities provide the growth of human capital as the basis of efficiency in all sectors of economy as a source of competitiveness and economic growth.

Apart from the economic effects of investments in human capital, human's education and high culture bring additional social benefits as the growth of life quality and levels of social optimism. The theory of human capital had contributed to change of attitudes and directions of governments in formulation of social policy with understanding of productive potential of social expenditures. Expenditures on education, health, culture, social care and welfare started to be treated by public officials and society as high-performance investments, not as non-repayable budget losses. As it was mentioned earlier, the development of human capital theory proceeded in concordance with the neoclassical school. In recent decades, the neoclassicists' initial principle of "optimizing behavior" of individuals began to spread to various spheres of human's non-market activity. Concepts and methods of economic analysis have been used to study such phenomena and social institutions as education, health, migration, marriage and family, crime, racial discrimination, etc. The theory of human capital can be viewed as one manifestation of this general trend, named as "economic imperialism". Today, human capital has become the central idea of the many humanitarian and social sciences, including demography. The role of human, population and humanity is growing in various branches in the processes which take place around the human.

2.5.2. Demographic and social aspects in human capital formation

At the turn of the 20th century, the major changes were undergoing in global economy, such as changes in structure of reproduced wealth, increase in accumulation rates of high intellectual human capital, establishment of new forms of basic capital reproduction on basis of accelerating innovations. The main instrument of that change was a new investment policy with distinctive feature of concentration of human, financial and material resources on priority areas of capital reproduction in order to accumulate national wealth and meet the needs of society. The main priorities of this new investment policy in the innovative economy of postindustrial society have gradually changed. A new social investment infrastructure have formed, based on investments in development of human capital, acceleration of innovations, formation of new structure of wealth reproduction and expansion of new post-industrial consumption. At present, there is an active transition to fundamentally new social and innovative way of the accumulation of reproduced wealth with the priority of human capital accumulation, primarily by investing in improvement of intellectual potential and quality of environment where human operates (social and ecological environments).

In developed countries the growth of employment in services and reduction in material production sectors is a naturally determined process, known in economic literature as "deindustrialization". (Kim, 2006) In modern conditions in Kazakhstan the real sector of economy is being distinguished and its importance in the creation of surplus product is being emphasized. However, we can not infringe upon the role and functions of social sphere in the efficient development of modern production. The development of social sphere and its structure is an objective condition for effective development of the intensive type of economy. The level of development of social sphere, today, determines the qualitative characteristics of human capital whilst in the innovative economy the requirements to human capital are extremely high. For realization of these requirements the scientific and technological aspects of social sphere must be at high level in order to successfully fulfill its role in social development.

In economic science of our country, the importance of functions and role of social sphere have rarely been studied. There is an urgent need in more in-depth researches and comprehensive objective validations of growing role of social sphere in effective functioning of innovative economy and in development of national human capital. Economic content of social sphere and its functions matters in the case of comprehension that the social sphere is the result of further development of social division of labor and the prerequisite for increase in overall effectiveness of economic management. Unfortunately, in many scientific works, the social relationships that involve individuals remain beyond the analysis of human capital formation. Indeed these relationships determine human behavior no less or equal to the position in the social hierarchy.

The development of social sphere is a necessary condition for progress in all spheres of human activity. High development rates of social sphere in the second half of 20th century was conditioned by scientific revolution which in turn made high demands on the qualitative characteristics of human capital. "The countries which could effectively use achievements of the scientific revolution had increased the "investments in human". These investments were carried out not only through increased budgetary financing in social sectors, but also through growth in incomes of the population of developed countries. The investments in social sector in these countries had been fully paid off by high rates of economic growth and efficiency of production through effective use of high technologies." (Piskunov D. 2006)

Social sphere has an active impact on the pace and efficiency of economic development through human and its qualitative characteristics (education, health, physical development). The material production, by increasing the hit ratio on the basis of qualitative characteristics of human capital, contributes to increase in household incomes and country budget, serving as a source of financing the social sphere. By ignoring the importance of investment in human capital, any country deprives own opportunities to effective development in the future. Therefore the issues of economic entity of social sphere, needs and conditions for its development, its character of interaction with the real sector of economy require in-depth studies. Application of the concept of "human capital" allows us to understand the role of social institutions, to identify not only the social parameters, but also to conduct economic analysis of the influence of social factors on market and innovative economy. From this point of view of human capital can be regarded as a form of expression of human's productive forces at the postindustrial stage of social development with socially oriented innovative economy.

It should be noted that human development has two sides, which are totally realized in the social sphere:

(1) *formation* of human capabilities, which takes place in the social sphere (education, health, culture);

(2) *usage* of these capabilities, which takes place in employment sphere and should provide opportunities for realization of human capital accumulation, professional development and different social activities.

In the process of human development, these two aspects must be balanced, i.e. the intensity of human capacities *use* should be balanced by the intensity of knowledge *creation*, health maintenance and social integration. The lack of balance will lead to a decrease and depreciation of human potential. This implies that the social sphere is a highly diversified set of enterprises, institutions and organizations. The development of this area is very important for a whole society and for each member of this society. Today, shift of public life paradigm is observed, caused by the reorganization of political and social institutions. "Historical analysis of economic systems functioning till mid-20th century enables to define the economic component which played a dominant role in this period. The effectiveness of social production was attained by the optimal combination of limited resources to maximize the amount of material wealth and

profits. The processes intensifying social subsystems have been initiated. These processes were connected to the implementation of the Keynesian economical concept of stimulating aggregate demand." (Abuev, 2007) Despite the fact that declared purpose of the concept had the economic nature (increase in investment and reduce savings) it was a concern for the growth of national welfare and living standards. This had triggered a transformation of the structure of entire socio-economic system. Changes in the mechanisms of world economy functioning testify the complete dependency of modern economy and efficiency of its social structure on the degree of influence of this society to its social subsystems. A society can generate the positive outcomes of these influences only through providing the orientation on the transformation of human. Especially, during this transformation a society has to concentrate on human's abilities, knowledge, skills and needs, and reach not just transformation of human as a main economic resource, but as the central figure in economic growth.

The socially oriented economic system is the most appropriate form which is capable of meeting the demands of current socio-economic processes, ensuring the functioning of modern economic system, since here the social component plays the dominant role, where human and human community placed as central ideas. The socialized economic system based on market relations, has as a primary function the servicing to the needs of society. Construction of welfare state in modern Kazakhstan will intensify not only problems related to human factor and new economic relations, but also it will intensify problems related to social orientation of economy. All this rouse demand for the socialization of economy, the development of its system for human and the satisfaction of human's cultural, spiritual and material needs. Socialization and realization of social policies in complex will provide improved overall efficiency of the economic system.

During the transition into innovative society and the utmost development of human capital (which appears as the main factor in formation of such society) there is a need for social changes aimed at the formation and reproduction of human potential. In this case, the social sphere should ensure high quality of life and complex in solving urgent problems adequately responding to challenges of the 21^{th} century.

Taking into account what was written above we can formulate the principles of social sector development in the context of human capital theory:

(1) equality, which includes ensuring equal access to social services, implementation of abilities within this sphere. At the same time social services should be available both materially and institutionally. For example, the material availability can be guaranteed by use of medical insurance schemes, provision of services by government, maintaining macroeconomic situation favorable to growth of incomes and formation of middle class. Institutional availability can be related to the presence of a sufficient number of medical facilities and staff, their territorial accessibility, etc.

(2) stability, which means a responsible use of resources and social sector development planning with aim to provide a chance for future generations to develop. In social sphere, this

means an alleviation of social and material differentiations, eradication of poverty, preservation and development of capacities in education and healthcare.

(3) productivity, which means an establishment of macroeconomic conditions and support of investment in human capital through social services and the most effective use of these investments, evinced in increase of human development index and other social indices (viability, intellectualization and etc.).

(4) right of choice, it necessary to provide a structure of social services, which would combine various forms of services, possibilities of individualization and specialization, various payment forms, etc.

Within the framework of the adduced development paradigms of social sphere there exist several its specific forms, but all they should be focused on ensuring the accumulation, development and implementation of human capital. These challenges issued not only for developed countries, but also to those which have focused exclusively on economic growth by now, because high human capital provides a significant and dynamic growth of the economy in the world today. Thus, activities in social sphere aimed to human's overall development (intellectual, moral, aesthetic, physical) by using special methods, which acceptance is carried out voluntarily, mainly from the perspective of the individual.

Social sphere plays a transferring role in the system of social reproduction, where the social memory of society is a special social mechanism for reproduction of behavioral standards, quality of human abilities and their generalities, based on historical experience and in accordance with the needs of further development of society. Social sphere has information tool of creation, accumulation and reproduction of the structure, functioning principles, processes, regulations and learning processes as well as the inheritance of experience, compressed by history, of many preceding generations.

The process of dynamic development of human capital is oriented in time, over which the original and initial conditions and parameters of the system are changing. Which means that human capital functions in historical time in which, unlike the logical time, the movement is carried out only in one direction from past to future and it is a practically indefinite. In such time, the current behavior and actions of economic agents are derived from their previous actions and reasoning their further activities.

The social sphere, which produces mostly intangible (non-material) goods and services can be called as moral sphere of production which exists in closely interwoven ties with general production, including its material structure (equipment, finances, schools, theaters, temples, etc.), socio-political structures (education, research and medical centers, religious and secular organizations, professionals, etc.). Social sphere forms cognitive orientations, spiritual life of society and moral climate in society. Being an important subsystem of economy, the social sphere not only spends resources, but also indirectly involved in reproduction of these resources.

2.6. Summary and discussions

At the turn of 20th century the humanity entered a new round of its development. Today the world moves from an industrial to a postindustrial society, where the innovative economy takes a leading role. The transition of society to postindustrial stage of development and innovative economy are accompanied by dramatic changes in the interaction of production and consumption; in priorities of values definition; in the formation of a new form of human activity (intellectual activity); in production process (innovative activity); in structure of accumulation (intangible capital); in structure of preparation and employment of human resources; in financing structure of tangible and intangible productions; in property relations, especially, the emergence and rapid development of intellectual property and in changing forms and patterns of social wealth.

Such transformation of society leads to the fact that labor begins to act as a form of human capital. The human capital, per se, becomes the main factor of economic growth and socio-economic development. The fundamental changes have been undergoing in lifestyle of humanity. The new society is now based on development of science and efficient technologies; on new quality of human capital, on changes in social structure; on higher levels of management; on more rational use of resources; on new opportunities in production associated with these factors; on consumption and cutting of the costs per unit of resources for the production of goods and services. In aggregate these circumstances constitute a new synergistic effect which calls forth the formation of a new society.

The studying of scientists' views over the years of formation and development of social and economic sciences, allows following conclusions:

(1) *Recognition* of human's role, his abilities and productive forces; of new role of intelligence and creativity in production process. These factors always were regarded by economists as the central issue of socio-economic sciences. Classical political economy had admitted the capitalization of human abilities. Many interesting assumption and conclusions on the role of human factors in economy were contained in almost all economic schools and works of prominent and chief scientists of the past.

(2) *Search* for ways of crisis management and application of scientific and technological revolutions achievements. Socio-economic science was gradually surmounting a purely corporeal approach to capital and economic activities, recognizing the leading role of human capital in economic relations; in ensuring the competitiveness; in achieving sustainable economic growth and in endeavors to find a harmony of economic, social and environmental developments.

(3) The socio-economic science had mastered the results of human capital studies in the world and could move forward in solving theoretical and applied problems of its development. In the socio-economic science there were proposed the new concepts, classifications and

typologies of human capital, approaches and methodologies of estimation and assessment, forms and ways of inclusion of human capital in the real economic cycle.

(4) *Obtainment* of science-based assessments of individual and aggregate human capital is a necessary basis for determining the optimal level of employees' wage structure. The main feature of human capital, as a non-material good, is its long-term investment period, use and return. Human capital is important and necessary to every human, every organization and every society. Everybody is interested in formation, accumulation and improvement of human capital. Therefore, all economic agents invest in reproduction of human capital. Formation of human capital begins with a human's birth and continues throughout his/her life.

The recognition of investment in human capital as an essential investment in development and prosperity of national economy changes the whole socio-economic model, the understanding of productive relations system. In the modern socio-economic model the investments are divided into two types: investments in human and physical capital. After involvement of these investment types in socio-economic relations we can determine the shares of labor (human capital) and capital (physical capital) in the income structure.

The movement of human capital is characterized by a certain periodicity. There are biophysical and social cycles of individual human capital reproduction as well as civilization cycles, innovative cycles of intellectual capital reproduction. Almost up to 1990's social and economical sciences have primarily studied the corporeal production and physical labor features. The science, education, health and other means of intellectual labor remained aloof from attention of scientists, since they were considered as non-material and therefore non-productive. However, the human and his/her abilities play a major role in production. The achievements of human intelligence, intellectualization of production led to a new round of development of human society. The industrial society was characterized by the prevalence of physical labor in it, while in the innovative economy the role of intellectual capital has increased. The intelligence, information and knowledge become major assets of economy in new informational and innovative society. Restrictions caused by demographic, labor, spatial and temporal, environmental, raw materials and other factors can be surmounted or mitigated with help of these new assets. Prevalence of intellectual labor in conditions of new society requires the disclosure of human's intellectual abilities and characteristics.

Human capital allows us to understand the role of social institutions, identify social parameters in production process and conduct the economic analysis of social factors influence on market and innovative economy. From this point of view, human capital can be regarded as a form of expression of human's productive forces at the post-industrial stage of social development with socially oriented economy of innovative type.

The utility of social services is estimated by the effect of social needs satisfaction: in healthcare by the quality of health and life attitude; in education by the quality of knowledge and professional skills, in cultural sphere by the richness of value orientations and lifestyles of people; in organization of business by enterprise and social responsibility of entrepreneurs.

More specifically the usefulness assessments of social services quality are disclosed in corresponding sectoral economies.

Socio-economic development of innovative society, first of all, aims to the creation of conditions for development of human capital, and only then to growth of material wealth of society. World Bank (1991) had concluded that any purely economic progress must, in addition to the growth in per capita income, the reduction of poverty, also contemplate the growth of social justice, the improvement of education, health and nutrition and the protection of environment. In addition, human capital is the basis of national wealth in developed countries and it creates preconditions for economic growth in developing countries and in countries with transition economies.

In order to increase the index of human development in Kazakhstan, primarily, we have to conduct a competent social policy. The first steps in this direction have been undertaken by the government of Kazakhstan. So in 1997 the President of Kazakhstan has made rather radical socio-economic initiatives. The basic idea of the presidential program was investment in human capital, namely: in housing programs, in education and health, and in agriculture.

One of the areas, ensuring the growth and reproduction of the human capital accumulation is the education, which provides personnel training of all spheres of social reproduction. The content and state of educational system is determined by the presence of socio-economic facilities in a society. Social institutes, created by educational system, by various educational institutions, educational organizations, educational agencies and schools (from elementary to tertiary levels) are used for selection, preservation, reproduction, distribution and extensive penetration of professional knowledge, scientific theories and cultural values in society, i.e. the formation of highly productive human capital.

Although the human capital theory was coined in economic sciences, the further development of the concept provoked increasing interest of other scientific fields and tremendous development of this theory in various scientific disciplines. One of them is population studies or demography which is, now, becoming the area studying the reproduction processes of main component of human capital – the human and population. If you follow the latest researches and works in the field of human capital, one can easily notice the prevalent interest of studying human capital within the ambit of population studies. This case is understandable and pleasing, since by studying population one can grasp the main ideas of human capital formation, accumulation, reproduction and development.

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3. The specificity of population quality development and the establishment of human capital in the case of demographic development and social relations transformation in Kazakhstan

3.1. Basic stages and trends of demographic development and human capital formation in Kazakhstan from the end of the 20th and the beginning of the 21th centuries

The properties of human capital are constantly accumulating, updated and enriched from generation to generation through transmissions of social links and adoption of value attitudes, motivations and behavioral stereotypes. The social, economical and political experiences are compressed by history, of many preceding generations and current generations bear in themselves the imprint of previously accumulated levels of population quality. All that means that human capital can be developed through time and generations, as well as, through different socio-economic conditions.

In this research we try to find a causal link between human capital formation and population under influence of the political and socio-economic processes and changes in what the population of Kazakhstan were involved. Perhaps, these processes were the most significant events, which generated a lot of political, socio-economic, ideological, psychological, cultural and organizational changes in the society. It is clear that the demographic behavior inherently can not have instant point of change in the timeline. But we will examine the period from which the all conditions had begun to change in history of Kazakhstan. Especially, we are particularly interested in the process of forming and possible correlation of the population which is changing in nowadays Kazakhstan. In addition, we will explore how different are levels of individual and group human capital between certain social groups (for example, ethnic, religious, regional, age, strata) within the society.

It is obvious that current characteristics of national human capital existing in modern Kazakhstan were formed beginning from early history of statehood on territory of Kazakhstan. Different populations with different types of economy were living here. The population of Kazakhstan had started its experience in human capital accumulation with the beginning of its history (no matter what is the criterion for “beginning of history”). However two conditions had been defined for choosing the time-frames for more deliberate research of human capital formation history of Kazakhstan:

1. We mostly were interested in populations which faced the most tremendous changes in socio-economic and political life on territory of modern Kazakhstan and had considerably affected current level of human capital.
2. We, especially, were concerned with the data availability on processes of socio-economic, political and demographic processes.

The earliest date, which allows us to meet both conditions isochronically, is 1897, when the first Census was conducted and which included the population who lived at that time in modern territory of Kazakhstan. We will discuss the relevance and limitations of statistical data within this study, as well as go over the main stages and trends of demographic development and human capital formation in Kazakhstan from the end of the 19th and the beginning of the 21th centuries.

3.1.1. Statistical data on Kazakhstan: history, limitations and peculiarities of development

The elaboration of statistical basis of Kazakhstan's demographic history began in the second half of 19th century. The completion of Kazakhstan's accession into the Russian Empire and administrative reorganizations by reforms of 1868 had set a goal to study more intensively the region and primarily, to research the population size and composition of this region.

The first attempts of "scientifically based" enumeration of Kazakhstan's population were the local censuses, military overviews and statistics of resettlement management organizations in Kazakhstani areas. The experience gained during these first steps had formed the basis for the First General Census in Kazakhstan which took place on 9 February (by New Style 28 January) 1897. In order to judge the reliability of the data from this census, it is necessary to know the methodology and especially its implementation process in regions of Kazakhstan. The complication of materials in this census was accompanied with combining some regions into regions which are not representing the subsequent and current administrative districts in Kazakhstan. For example, from Akmola region one must exclude Omsk region (Russia), the materials on Ural region include also materials on Bukei Orda, Semei region includes Pavlodar region, from Syr-Darya region the Pishpek and Przewalski regions (Kyrgyzstan) should be excluded, Mangyshlaq region was included in Trans-Caspian region, and materials on Torgai region is containing Kostanai and Aktobe regions. The census 1897 is not an ethnic but a linguistic census, which was built on the identification by language. Most probably some Ukrainians, Belarusians, Jews, Mordovians considered Russian language as native, possibly part of Kirghiz, Tatars, Uzbeks identified Kazakh language as native. Moreover, in Kazakhstan rumors were disseminating that the census is conducted in order to convert the nomads into settled, with further conscription, while the rich feared of higher taxes, concealing the real size of their farms. It should be noted that results of census 1897 had the common shortcomings which were inherent in entire Russian Empire, but for some items they were even more aggravated by peculiarities of the region. The data on employment and amateurish performance have been unsatisfactory developed. On materials of the Census 1897, it is very difficult and sometimes almost impossible to assess and establish a social and professional composition of population.

The First General Soviet Census was conducted at 28.08.1920. Since, the civil war had not yet been completed the whole territory of Kazakhstan was not covered by this census. Along with general population census, an agricultural census was also carried out. In addition to all that a brief stocktaking of industrial enterprises was provided. Besides the general demographic indicators census 1920 includes items like: education, occupation (main and secondary); situation in trade, place of work, professions, livelihood, physical disabilities and mental health.

In Kazakhstan due to inconvenient routes two cities (Aktau and Torgai) were not covered by this census. (Kuzembiuly, 1999)

The most complete census was General Census of 1926. The methodology and organization of this census had covered both academic and industrial achievements in population estimation techniques of the world. An important aspect of preparatory period of Census 1926 was the preparation of maps and toolsets. The first priority was the collection and compilation of geographic, schematic and other maps and printing the settlements on them. A serious problem arose during the clarification of administrative characteristics of settlements. There is no generally accepted critical analysis of the Census 1926 results. Most of the data are used without any amendment. Nevertheless, there is a debate on the question of authenticity of the Census 1926 materials, among demographers. The authors of materials on the Census 1926 indicated that the Asian part of the country is characterized by an underestimation of women in younger ages. This was the result of traditional reluctance to allow strangers to contact young women in family. Also, during this time there was a state campaign against polygamy. As a result, the young married women were either concealed or their ages were distorted.

Census 1937 was held in January, which was quite successful. However, it was a "shot census". The real size and structure of population, which was estimated relatively accurately (and which is now proved by many scientists and demographers), was much smaller and different than previously exaggerated estimates. These estimates had refuted the thesis of rapid growth of population during socialism. This census, its program, and most importantly, its disappointing results are not suited Stalin and his entourage. Despite the considerable organizational work and the enormous costs, the results of Census 1937 had been found defective, and the most of the organizers of the census in center and on peripheries were repressed. It was announced that the Census 1937 carried out with flagrant errors and a huge undercount. The materials from this census were not processed for publication and subsided in archives and have been blacked out. Therefore, in conditions of increased repressive state pressure, the work on a new census had been launched, which was to demonstrate the success of the first two Five Year Plans, serving as Communists' powerful propaganda tool.

In 17.01.1939 another census of the USSR was carried out. Despite all efforts, the Census 1939 had not provided the desired results, its results were "proofread" and adjusted, including overstated number of residents. The task of the Census 1939 was to count what the party and government have ordered. And no one doubted that the statistics would cope with this. For example, in order to confirm the thesis of rapid growth of urban population, the status of many settlements had been changed: hundreds of villages were named as cities. The result is a figure, which showed a more than doubling in number of residents compared with 1926.

A separate issue was the rewriting of prisoners. It was impossible to conceive the region where the population density was always less than one person per square kilometer, have suddenly become densely populated. Therefore, the census papers of prisoners (in 1939 they were about 3 million) were evenly distributed by small portions throughout the whole country.

However, despite all efforts, the Census in 1939 did not refute the results obtained in 1937. The organizers of the census 1939, feeling that they have been facing the sad fate of predecessors, started the urgent search for unrecorded citizens. From the perspective of the authorities, the results were not so brilliant, but it was impossible to declare as defective another census. As a result, the organizers were awarded, and the results were published in ultra-short form. The major findings of Census 1939, including the seven-volume edition prepared for publication, were also blacked out due to fear that by aggregating the data by regions, it will be easily possible to detect a postscript. (Kuzembiuly, 1999)

The results of the Census 1939 were not fully published. The Census 1939 is the most "mysterious" census in the history of the USSR and Kazakhstan. The politicization and ideologizing of census program had sharply lowered its methodological level. The absence of professional statisticians, who were subjected to repression in 1937-1939, had a big impact too.

15.01.1959 was held the first postwar census. The organization and methods of Census 1959 was close to the Census 1939, but it had its own traits. Particular attention was paid to the level of education in the country. The long legacy of the Stalinism ideology had affected on materials of this census. However, the materials of period 1939-1959 were published and become available for researchers. During this period, a new generation of demographers entered the scientific world. The population study, for the first time after the 1920's, admitted into social sciences again. (Kuzembiuly, 1999) (Abdakaimov, 1994)

15-22 January 1970 All-Soviet Population Census was held, which is exceeded all previous census on the organizational, methodical and publishing parameters, and is comparable only with the results of the Census 1926. Some materials of Census 1970 was obtained from results of the sample survey (25% of residents), these materials had high representativeness according to that time. A particular attention was paid to the employment and occupational structure of the country. In addition, for citizens of working age, employed at home or private farms, a separate questionnaire was filled in order to identify opportunities and conditions for their involvement in social production.

The next census took place on January 17, 1979, which is also studied the possible involvement, in the national economy, of additional manpower by drafting a separate questionnaire, which included 9 questions to citizens of working age, working at home or private farms. (Kuzembiuly, 1999) (Abdakaimov, 1994)

The next Census 1989 focuses on the workforce potential as well. Also in this census, there is a big concern about housing conditions in the country. The census 1989 had included wide range of characteristics for observation: population size and structure, education, livelihood, the distribution of employed population by nationality, by branches of economy, etc. Due to some hardly understandable reasons, unfortunately the results of the Census 1989 are hard to get, in Kazakhstan.

The first census in the history of independent Kazakhstan had become the Census 1999 (February). The census 1999 has included the whole experience and range of observations and

characteristics developed by previous censuses. The second census was conducted in 25.02-6.03 2009. This census has included many innovations both in estimation parameters and in process of conducting, calculation and analyzing the census materials; one of them is the integration of GIS into data processing.

Considering the invaluable significance of population census, it is better to comprehend, at the same time, that each of them represents the data only on a specific date. Here, the vital statistics becomes very important tool in order to analyze changes of population in the intercensal periods.

The development of statistical and population science in Soviet Kazakhstan has passed several stages. In 1920's Soviet statistics was characterized by an abundance of data. There is a "statistical boom" in the 1920's in history of Soviet statistics. A lot of works were written in this period, amassing a great experience. However, the reliability degree of statistics on population in the 1920's was not highly valued, even by its contemporaries. In the late 1920's the interest in problems of population had declined. By 1925, the territory of Kazakhstan had been mainly formed. *Eo ipso,* removing the practical need for further detailed study of population in defined regions. (Kuzembiuly, 1999) (Abdakaimov, 1994)

In the 1930's the statistical works, researches and data on the population had dramatically declined. The sources published at that time mostly describes the state of economy, the achievement of healthcare, the literacy levels, etc. During the World War II and the postwar years, the publication of statistical agencies, with rare exceptions, had been ceased. From mid 1950's the statistical publications were renewed and rapidly developing. In general, the data in statistical yearbooks include more items than the material of censuses. For a variety of issues data in periodic reporting, published in the yearbooks, are more representative than materials of population censuses. Solely details regarding migration were scanty. To monitor the dynamics of the human resources quality of the country in Soviet period the following yearbooks give useful information: "The economy of the USSR" (sections: Land and People, Science and Technological Progress, Human Resources in Agriculture, Labor, Education and Culture, Healthcare).

Data of subsequent statistical materials about Kazakhstan (1960's – 1990's) were published in a common methods and program which allows us to compare the data in yearbooks, not only for Soviet period, but also for the first years of independent Kazakhstan. This tradition was continued by the statistics of independent Kazakhstan, and in 1997, the Committee on Statistics of Kazakhstan, began to publish "The Regional Statistical Yearbook of Kazakhstan." These yearbooks have kept the general methodology, structure and parameters of previous account, but the regions and processes in Kazakhstan, in them, started to be researched more in detail.

3.1.2. Main stages and trends in demographic development of Kazakhstan (1890-1990)

In previous chapters we wrote that human capital is accumulated and developing from generation to generation through history. In this chapter we want to address to the question of human capital from historical point of view. How human capital developed through demographic history of Kazakhstan, and how we came to the current situation with human capital in Kazakhstan.

The development of industry in Kazakhstan in the late XIX century, especially development of small-scale industries and railway network had accelerated the growth of towns. The towns were growing, which were founded as outposts in the colonization of Kazakhstan. Populations of regional and county-level towns were rapidly growing, which became not only the administrative and trade-economic, but also the industrial and cultural centers. One of the commercial and industrial centers in Eastern Kazakhstan was Semipalatinsk with population of 31 000 people in 1900. In the Northern Kazakhstan, in Petropavlovsk, there were 21 750 inhabitants as well as 66 different enterprises for processing agricultural goods with a general capital of more than 1 000 000 rubles. These enterprises employed 1 375 workers. Population of Kostanai, which was founded in 1879, just in 18 years had increased 2,5 times and reached 14 300 people. Approximately, the population of Akmola also had increased in the same way, which became the center of trade. In the Western Kazakhstan, Uralsk became a trade and industrial town, in 1900 there lived 39 000 people. The Ural-Pokrovsk railroad (1895-1896) had greatly contributed to the growth of the town. The towns such as Pavlodar, Atyrau, Ust-Kamenogorsk, Karkaraly, Kokshetau, Kapal, Aktobe and Zaisan were also rapidly growing. Populations of Shymkent and Aulie-Ata had significantly increased. Verny (now Almaty), the administrative center of Jetisu region (South-East), had 37 000 inhabitants in the beginning of the 20th century. (Kuzembiuly, 1999) (Abdakaimov, 1994)

The history of Kazakhstani population formation in the 20th century can be divided into 3 main periods: (1) mid-1920's - early 1960’s; (2) mid 1960's - late 1980's; (3) 1990’s. During the first period, the population was formed largely due to a mechanical increase (migratory processes), in the second period the natural increase dominated, while net migration gradually become negative, in the third period a decline in the total population observed.

As we mentioned earlier, by 1925 the borders and territory of Kazakhstan had mainly been formed, but there was still a series of administrative and territorial changes, but they had intra-country matter. However, not only administrative changes affected the change in size and structure of population. In the early 1920's Kazakhstan suffered from a terrible disaster – famine (1921-1922). The famine, in different extent, had concerned to everyone all over the country. The inevitable concomitants of famine were different epidemics. The total number of registered epidemic diseases had reached 208 000 people, almost every tenth resident of country was

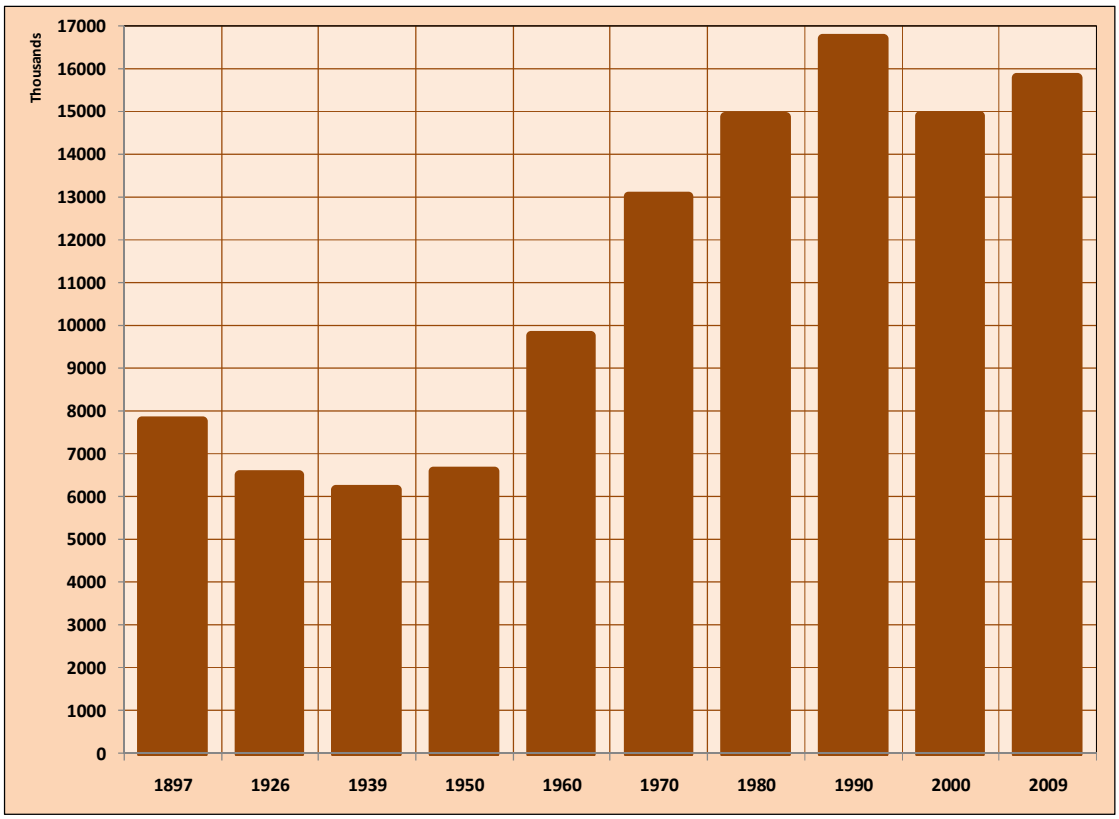
terribly ill. Cause of disease was famine, the ceaseless movement of starving people from the Volga region to Turkistan through the entire territory of Kazakhstan as well as the movement from rural areas to urban ones. During the famine years the population of Kazakhstan had decreased by 19.2% (rural population by 21.5%). But, the most severely had starved, the Western Kazakhstan (Oral, Orynbor, Aktobe, Bukei and Kostanai region). According to various sources the number of starving people by 1922 in this region had reached 2 286 200 people (i.e. 93%). According to M. Sdykov the 1921-1922 famine had caused more damage of population than civil war had (1918-1921). The loss of more than one-third had outnumbered the loss of wartime. There was a high mortality rates among population. Population decline (mainly due to outflows from the region) continued also after the famine, the causes were often psychological, due to several years of “crop-failure”, for some of the population, the opinion had been established that the low-yielding harvests have become chronic. The demographic consequences of the famine 1921-1922 can be traced in the age structure of subsequent censuses. So in the 1926-1979 censuses there is a visible gap in the (age groups) generation of 1917-1924. (Kuzembiuly, 1999) (Abdakaimov, 1994)

After these tragic events so-called "regeneration period" begun. This period (1924-1930) was mainly characterized by a predominance of rural population in Kazakhstan. However, during 1926-1939 the population of Kazakhstan increased up to 2.6%, while the urban population up to 268%. If in 1926 the rural population exceeded the urban population by 10.8 times, in 1939 that was only by 2.3 times. Over these years, the rural population decreased by 21.9%. Both by sizes and by paces, Kazakhstan had outstripped the All-Soviet rate of urban population growth (112.5%). To some degree, the drop in fertility, and therefore the number of population was affected by the fact that since the mid 1930’s a generation, who was born during the World War I and the Civil War when fertility was low, had entered its active fertile period. These and other objective factors significantly contributed to decrease in rural population.

In December 25, 1931 a decree of the Regional Committee and the SNK of Kazakhstan was issued, which targeted on the full completion of nomads settling. By June 1932, 73.1% of farms were collectivized. By paces of socialization and collectivization of sown and cultivation areas of peasant sectors in country, Kazakhstan took up the first place in the USSR. Most of rural population was dissatisfied with progress of collectivization, which had forced them to leave their homeland. The livestock was socialized by administrative method. There was a massive loss of cattle during this campaign, as it was not possible to provide, collected in one place animals, with forages and premises. Thus, in just a bit more than two years the country had lost about 90% of its livestock. A horrendous famine started in history of Kazakhstan, surpassing by scale all previously known. Already by spring of 1931 Almaty (which became by this time a new capital of country) began to receive information about the famine from different regions of Kazakhstan, but the authorities in center ignored that and only toughened the administrative pressure. As a result, within 1931-1933 about 2 000 000 Kazakhs and 250 000 Kazakhstanies of other nationalities died. Several hundred thousand Kazakhs migrated to China,

Mongolia, Iraq and Afghanistan. The number of Kazakhs halved. There is no common opinion and assessment, among Kazakh historians and demographers, concerning the number of Kazakhs who became victims of famine (from 1 750 000 to 2 020 000 persons), presumably there will be other estimations. But, whatever is the final figure, there is an obvious and terrible tragedy of Kazakh people in history, the consequences of which affect the population of Kazakhstan up to today.

Chart 17 – Dynamics of population change in Kazakhstan (1897-2009)



Another major public event which influenced the structure and size of population was boosted and drastic industrialization. Since 1926, the USSR had taken a course of accelerated industrialization. Kazakhstan, by the designs of the Moscow authorities, had to become one of the major areas of rapid industrialization. F. Goloshchekin, who actively pursued the policy of center, had advocated the establishment of the mining industry and railway transport in Kazakhstan in order to export raw materials. At the same time the reconstruction of existing and construction of new enterprises were being implemented. Ridder and Karsakpai mining-complexes and Karaganda coal mines had been rehabilitated. The construction of the Shymkent Lead Plant, Balkhash and Jezkazgan cooper-smelting works, Ust-Kamenogorsk Lead-Zinc Plant had started. Industrialization was carried out in an atmosphere of pace pressurization and unduly set plans. As a result, there arose difficulties with provision of facilities under construction with labor force, raw materials and equipment. Acceleration of industrial building construction led to

a shortage in labor force. To ensure construction projects with “working hands” and at the same time in order to save on training of local Kazakh workers the authorities practiced a so-called “organizational recruitments” (OrgNabor) in covered by unemployment Western regions of the USSR, By “OrgNabors” 559 000 people had been brought in 1931-1940. A significant number of workers, especially low-skilled, were made up from former peasants from villages devastated by the collectivization. As a result, the labor productivity fell very sharply and staff turnover increased. One of the sources of labor force replenishment was dispossessed and exiled kulaks (peasants) and other former political dissidents from the central regions of USSR and Siberia. In 1931 in Karaganda about 70 000 people were resettled in 25 villages. The “special settlers” were not allowed to leave the villages and mainly worked in mines, as well as on constructions of barracks and railways. These workers were given out 600 grams of bread per day and for their dependents only 300 grams. Hunger and disease were rife and rampant and most of the “Special settlers” died, but in their places the new ones were brought. Just in 1931 about 150 000 “special settlers” were exiled to Kazakhstan. The total number of “special settlers” had reached 360 000 people by 1937.

Another ugly appearance of "Soviet industrialization" was the system of camps of the OGPU-NKVD in order to provide a cheap labor force for large enterprises. In 1931 the Karaganda camp (Karlag) was created, which contained repressed people from all regions of the USSR. During the 1930’s and 1940’s a number of such camps arose in Kazakhstan and the country become a huge place of exile. (Kuzembiuly, 1999) (Abdakaimov, 1994)

In general, the results of industrialization are estimated ambiguously. The industrialization was carried out by tremendous lowering of population’s standard of living, especially of peasantry. In five years (1929-1934) there was significant inflation rate, money supply increased up to 180%, retail prices of manufactured goods rose up to 250% -300%. Many items of the “five-year plan”, especially concerning the light industry, had not been fulfilled. Nevertheless, there was a substantial increase in overall industrial production as well as in share of industrial production in economy of Kazakhstan.

During the World War II the importance of Siberia and Kazakhstan in the economy of USSR had considerably increased. Kazakhstan became a deep southeastern rear and in accordance with decisions of the government had to reorient its economy to the needs of the battle front: to master and expand the production of defense products and strategic materials, to widen industrial building construction, to take over a number of enterprises and specialists transferred from the front line and thereby accelerate their entry into production processes at new places. In fact, there began the great restructuring of the Kazakhstan’s economy, which was accompanied by a redistribution of material and human resources, providing industry with qualified personnel to replace the workers who went to the battle front.

In connection with the expansion of production capacities and facilities of old plants and factories, with construction of new objects, as well as with deployment of evacuated enterprises, the number of workers during the war significantly increased. In the first months of

the war the authorities managed to organize the evacuation of industrial enterprises. In a short time 142 enterprises of the western regions of the USSR had been transported and placed in placed in Kazakhstan, 532 506 people (with different age and professions) were evacuated to the territory of Kazakhstan. The arrival of so many people offset the shortage of manpower for the economy in Kazakhstan. If during the wartime the number of workers and employees in the USSR, as a whole, fell by 38%, in Kazakhstan it increased by 7% (1940-1943). The retirees, women and youth were also actively involved in production process, which became the main labor force in the rear. If in 1940 158 000 people were employed in the industry, the amount of these people reached 255 000 by 1945. (Kuzembiuly, 1999) (Abdakaimov, 1994)

The construction of new industrial projects was continued and even accelerated. In Kazakhstan, by the end of 1942, there came into operation 25 different mines, 11 concentrating mills for nonferrous and ferrous metallurgy, 19 coal mines, 3 opencast mine, 4 oilfield and Oil Refinery Plant in Atyrau. The construction of railways was continued in 1942-1943 the construction of lines Makat-Orsk and Akmola-Magnitogorsk was completed. During the years of war Kazakhstan had 30% of the all-Soviet copper smelting, 50% of copper ore extraction and 60% of manganese ore extraction, 65% of the metal bismuth extraction, 70% of complex ore extraction and production of 85% of lead. (Kuzembiuly, 1999) (Abdakaimov, 1994)

The working conditions in agriculture had also dramatically changed. Approximately two-thirds of the total population of Kazakhstan, who went to the battle front, was from villages and rural communities. Women became the main source for replacement of mobilized men in agricultural production. By the end of the war in many “collective farms”, women were amounted up to 70-80% of all workers. The number of women, who reached by the end of a year more than 400 work days (i.e. three times of required minimum of work), had increased from 20 607 in 1940 to 94 202 in 1945. During the war, the agriculture of Kazakhstan gave the country 504 519 tons of grain, 235 879 tones of potatoes and vegetables, 258 811 tons of meat, 319 400 tons of milk, 17 600 tons of wool which was more than five years before the war.

These undeniable successes of the Kazakhstan’s economy were given by huge labor. Most of the able-bodied men were called up to the war. The share of women in the general industry accounted for more than 50%, and in the light and food industries up to 80-90%, the share of youth and adolescents in the industry accounted by 35-40% of all workers in Kazakhstan. The work discipline was toughened, the working hours were extended, the staff turnover was limited, the compulsory overtimes were introduced (up to 11 hours at 6 work-days per week) and all vacations and leaves were canceled. The breach of discipline and work-leaves were punished by imprisonment for a term from 5 to 8 years.

The management of the economy was militarized; the forced distribution of products in the form of rationing was introduced. Like in previous years there were many “special settlers” among the overall workforce in Kazakhstan. At the beginning of the war the Labor Army was formed from “special settlers”, their total number in Kazakhstan was more than 700 000 people (200 000 of whom were Kazakhs). By the fall 1941, by absurd accusation in aiding and abetting

the Nazis, 361 000 Volga Germans had been deported to Kazakhstan. In 1943-1944 the forced relocation of 507 000 Balkar, Karachai, Ingush and Chechens, 110 000 Meskhetian Turks, 180 000 Crimean Tatars was carried out to Kazakhstan. Many tens of thousands of them died, from hunger and disease, in the first months after their deportation, the survivors became new members of the Labor Army. They were forbidden to leave the new place of residence; any violation of these regulations was punished by drudgery up to 20 years. At the cost of enormous tension and hardship the economy of Kazakhstan and its all population made its invaluable contribution to the victory of the USSR during the World War II.

In 1954 the Central Committee decided to expand the acreages in the USSR at the expense of virgin and long-fallow lands development in the Northern and Central Kazakhstan, Siberia, the Urals and North Caucasus. To ensure the new land with labor force a mobilization of volunteers from the Western regions of the USSR was carried out, who were given significant facilities and benefits: free transportation with all property, cash allowances up to 1 000 rubles, the credit for construction up to 20 000 rubles for 10 years, up to 2 000 rubles for the purchase of livestock, the exemption from agricultural tax from 2 to 5 years. In total, for the development of virgin and long-fallow lands, in 1954-1959 more than 20 billion rubles were granted. Council of Ministers of the USSR and the Central Committee of CPSU had elaborated the project for 50 000 families resettlement in Kazakhstan, but these plans were over fulfilled in short term. Only from Moscow and Moscow region 54 000 people arrived in Kazakhstan, from Ukraine 93 000, from Belarus more than 100 000 people. In 1954-1962, from the Western Soviet Republics more than 119 500 families came to Kazakhstan. Most of immigrants arrived in the Northern region of Kazakhstan, where a mechanical increase of population reached 83% in 1939-1959. The population of Akmola region in 1953-1955 increased 96 times, the population of Kostanai increased 26 times. In all, during the period 1954-1962 about 2 000 000 people arrived in Kazakhstan, in order to develop virgin and long-fallow lands. At the same time, the “OrgNabor” of labor force continued for the industrial enterprises of Kazakhstan. During 1954-1960 from outside of Kazakhstan, more than 300 000 people arrived in the industry of the country, and in 1961-1965 the "OrgNabor" had grown up to 500 000 people, most of whom were the immigrants from Ukraine, Belarus and Lithuania. In 1965-1975 115 000 people arrived to industrial sites of Kazakhstan. (Kuzembiuly, 1999) (Abdakaimov, 1994)

The urban population increased significantly both in the whole country and in each region. The growth in number and proportion of urban population is the result of industrial development in Kazakhstan. 730 new industrial enterprises were built and put into operation during 1954-1958. In general, during 1939-1959 the population in Kazakhstan had increased by 45.5%. By rates of population growth, Kazakhstan ranked the first place in the Soviet Union, owing, basically, to large migration inflows.

Also during 1959-1963 about 200 000 people from China returned to Kazakhstan. These were the people who fled their homeland during the civil war and collectivization. Most of them were Kazakhs, Uyghur, and Dungan, although among immigrants were Russian, Tatar,

Uzbek and Kirghiz. However, a complication of relations between China and USSR, in early 1960's had canceled this process and more than 1 000 000 Kazakhs had to live in the territory of a neighboring state. (Kuzembiuly, 1999) (Abdakaimov, 1994)

Since the mid 1960's there were no great migrations on the territory of Kazakhstan, the population was formed mainly due to natural increase. The basic demographic trends were comparatively stable during long period (1959-1989) with almost no oscillations, which allows us to trace by analysis this one big period of demographic situation in Kazakhstan.

The regional analysis shows that from 1920's till 1980's there was the growth in number of both urban and rural populations. The growth rates of rural residents were constantly decreasing from decade to decade. The main characteristic is that the main concentration of the rural population is in two districts (North and South). The high concentration of rural population in the Northern area is the result of the development of virgin and long-fallow lands. In 1989, there was concentrated 72.4% of the total rural population of Kazakhstan.

Since 1975, in whole Soviet Union the proportion of working-age population started to decrease, which not allowed the increase in industrial production and initiation of new large-scale projects, at the expense of mass attraction of new labor force. So from the mid-1970's the population influx in Kazakhstan begun to weaken. This was due to general demographic situation in the USSR, where not only the proportion of economically active population started to fall sharply, but also the fertility had considerably decreased and the mortality had increased. These negative demographic processes primarily were observed in the Western and Central regions of the USSR. By the end of the 1980's the number of outmigration from Kazakhstan began to exceed the number of inflows of population. Thus, in 1989 the negative net migration for Kazakhstan had amounted 46800 people. The stable trend of emigration outnumbering over immigration began in 1968 in Kazakhstan and especially increased with the beginning of "perestroika" (1985) and the subsequent collapse of the Soviet Union.

Since 1991, the decrease of Kazakhstan's population was mainly associated with high rates of emigration. Falling fertility rates and rising death rates. So, if in 1992, Kazakhstan had 16 985 000 inhabitants, in 1993 it has already 16 942 000, and in 1995 only 16 590 000 people. Since 1992, for the first time in 50 years postwar history population of Kazakhstan began to decrease. The urban population decreased by 5.3%, rural population increased by 0.5%. Population of Kazakhstan has faced tremendous changes, during 1990's, which influenced its human capital.

3.1.3. Main socio-economic changes in Kazakhstan since the transition period

In the first years of independence, Kazakhstan had experienced a series of problems relating to economic and social matter: an intricate economic situation during transition into market economy, decline in standards of living among the majority of population, a sharp decline in providing of social care by the government and so on. The collapse of the Soviet Union and the unified economic system led to a severe economic crisis in the very earliest years of independence, when the suspension of production, rising inflation and unemployment led to a decline in living standards and to destruction of social sphere.

The substantial changes in economic and social sphere of early 1990's had a direct impact on the demographic situation in Kazakhstan. Demographic realities are substantially determined by economic and social circumstances and institutions. But they also influence those circumstances and institutions through variety of channels (Bloom, 2004). The long term growth of human capital is intimately connected with the demographic transition both as a factor in it as well as an outcome of it. Human capital is a link which enters both the causes and effects of economic-demographic changes. (Mincer, 1981)

Perhaps, the 1990's were the most active years of these mutual influences of demographic changes and human capital reproduction in Kazakhstan. Because, the process of social transformation in Kazakhstan was accompanied by a giant immediate devaluation of human capital, which had been accumulated and generated in previous socialistic era. This massive depreciation could not but affected the level of productivity in different areas of social life and social relations. The post-Soviet society found itself in a very difficult situation. All previous knowledge, skills and capital turned into almost nothing. Society started the process of gaining new knowledge. The old part of human capital came under reevaluation and reconsideration. Since human capital is considered as the main source of development, no wonder that, the value of human capital, by new measures, had declined and caused one of the main reasons of break in development of Kazakhstan in early 90's. In addition, the degradation and depreciation of individual's creative potential and human capital took place due to long-lasted unemployment.

Since the fall of the Soviet Union, and declaring independence, development indicators have experienced a rapid decline. Policies to placate the situation included macroeconomic stabilization policies, promotion of sound economic management, small businesses sector development and a program of public works and job creation. But areas that needed to be addressed by governments came into the forefront in the mid-1990s. These included poverty alleviation, corporate governance, and regulation of both the private and the public sector. The moves to price liberalization that started in the early 1990s were rapid, but at the cost of high

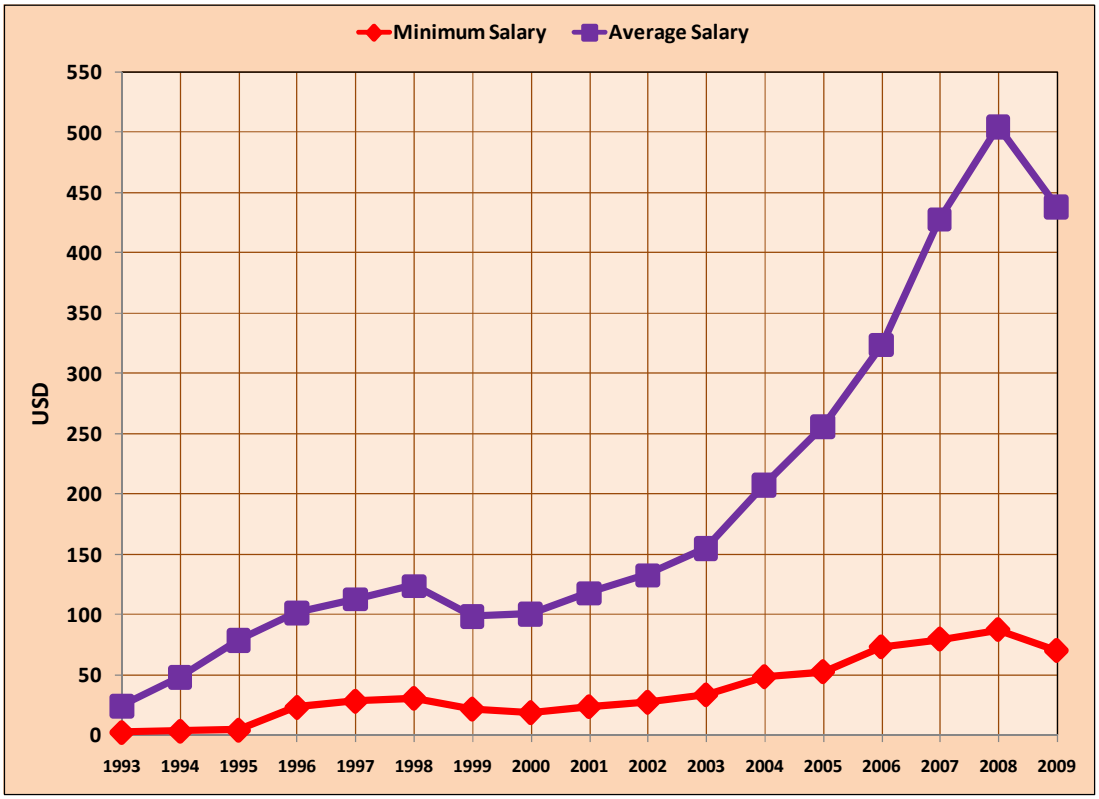
inflation at a time when monetary and fiscal policy were unable to bring about macroeconomic stability and a large percentage of the population of Kazakhstan was impoverished.

The economic crisis was accompanied by rising unemployment. Thus, in 1995 the unemployment rate was 10% of economically active population, and in regions with suspending industries and companies the rate had reached 16-18%. (Jumasultanov, 2005)

In consequence of socio-economic crisis, the numbers of people whose average income was below the subsistence level started to grow. According to the Ministry of Labor Republic of Kazakhstan, in November 1992 the share of this population was 11.9% and in 1995 it reached 37%. According to State Committee on Statistics of Kazakhstan, this share estimated as 44%, while by unofficial estimates of poverty level in 1995 was estimating around 70-80%.

According to the World Bank's index of real wages, Kazakhstan, in 1994, had the lowest wages in the CIS. Thus, the average wage was only $24. Subsequently the average wage increased, but a large gap between wages in different sectors and industries as well as among regions still remained. (Jumasultanov, 2005)

Chart 18 – Level of salaries in Kazakhstan (1993-2009)



In general, in the 1990's the rates of income growth considerably were lagged behind the growth of consumer prices. According to the State Committee on Statistics of Kazakhstan, at the beginning of 1995, the level of real incomes of population in Kazakhstan was amounted approximately by 26% of the 1989 level. The sharp decline in the solvency of population had negatively affected the consumption, when expenditure on food in gross family expenditures

had increased from 39% in 1989 to 45-70% in 1995. The cost of provisions was rising continuously throughout the 1990's. (Jumasultanov, 2005)

"The main social safety net, the system of benefits, broke down because of the large increase in poverty due to loss of jobs in an environment of rising prices. The challenge for Kazakhstan has been to promote employment, whilst maintaining a social safety net that it targeted to those in need. For most of the 1990's the social safety net system was under-funded, but the economic growth the late 1990's and early 2000's has created an environment where the government can, and is developing a targeted social development safety net. However, the problems that are facing the republic are no less severe because the distribution of income is now far more diverse than it was before the market reforms." (Charman, 2007)

Another significant factor of demographic situation complications in the early 1990's was a crisis in social sphere: education, health, social welfare. After the collapse of the Soviet Union 80% of preschool and child care organizations were closed, the payment of allowances for large families had been ceased. In the health sector, the availability of medical care had been sharply limited. (See charts 19, 20) Low standards of living had adversely affected the upbringing and education of children. Many families had faced the challenges such as lack of clothing and school supplies, lack of funds to organize adequate recreation and treatment.

The economic situation in Kazakhstan had gradually begun to stabilize too. Owing to the reforms in establishment of market economy and favorable market conditions, in 1999-2000, in Kazakhstan, there were processes of economic stabilization and growth of key indicators in production. This trend affected the process of implementation of socio-demographic programs, in some extent, and influenced the general demographic behavior of population both inside and outside (encouraging them to immigrate in) Kazakhstan.

"However, by 1999 the average level of growth rate was 10% per annum. The IMF commended the Kazakhstan "for continued prudent macroeconomic policies, which, supported by high oil prices and increasing foreign investment, have led to strong economic performance, broad based economic growth and the rapid accumulation of international reserves and assets in the National Fund" (Dzankobaeva and Piedra 2004). Macroeconomic policy has been applauded. In September 2002, Kazakhstan received an "investment grade" credit rating from a major international credit rating agency, and was the first former Soviet Union country to do so." (Charman, 2007)

Chart 19 - Commissioned objects of social sphere in Kazakhstan (1990-2008)

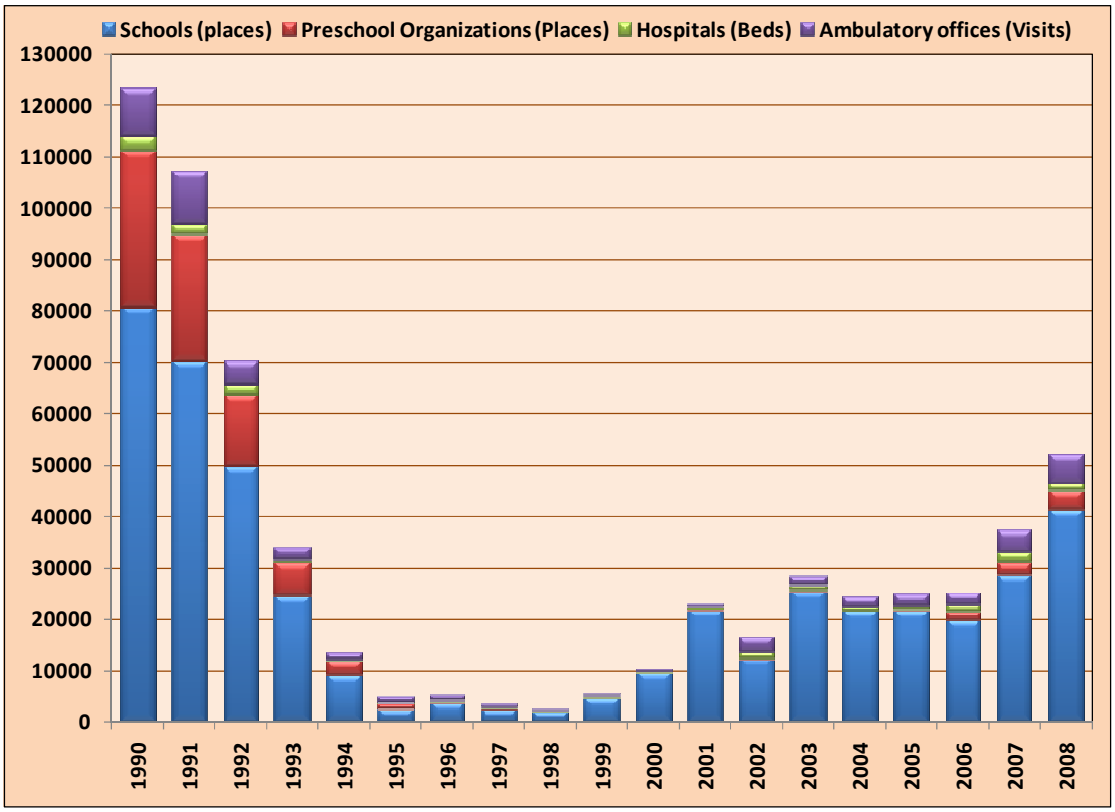
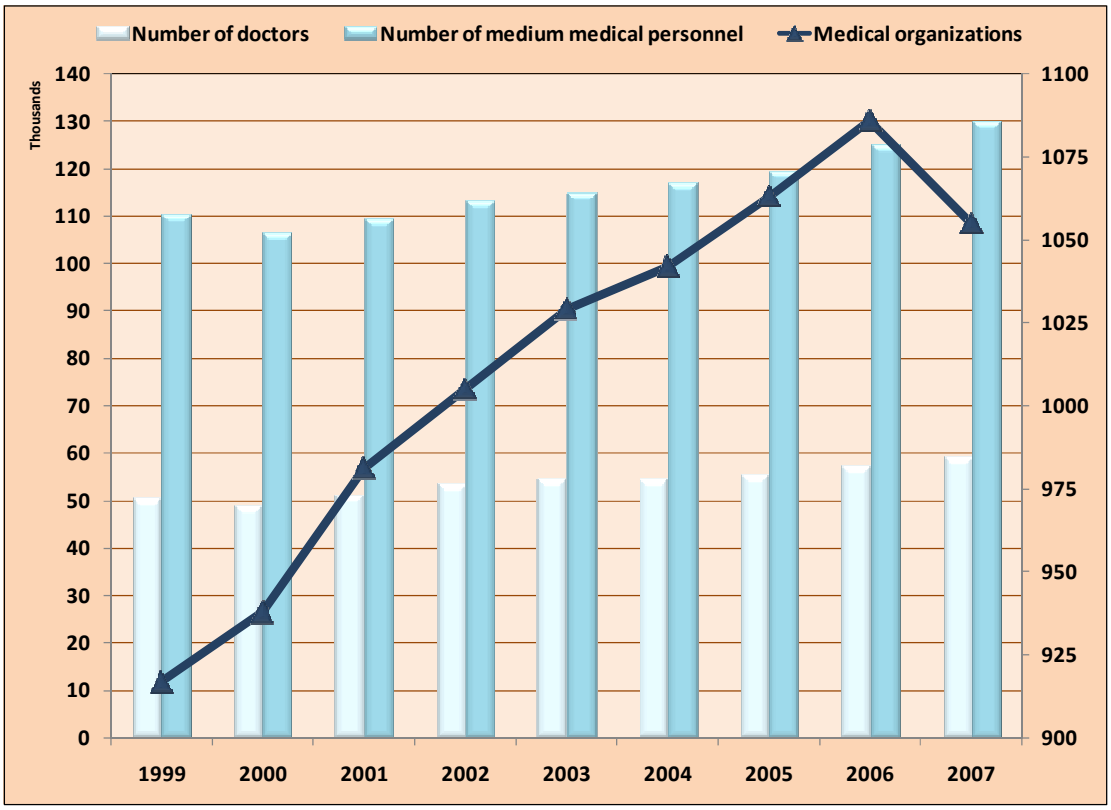


Chart 20 – Recent trends of healthcare service potential in Kazakhstan



3.1.4. Specific and basic demographic trends in Kazakhstan during the transition period

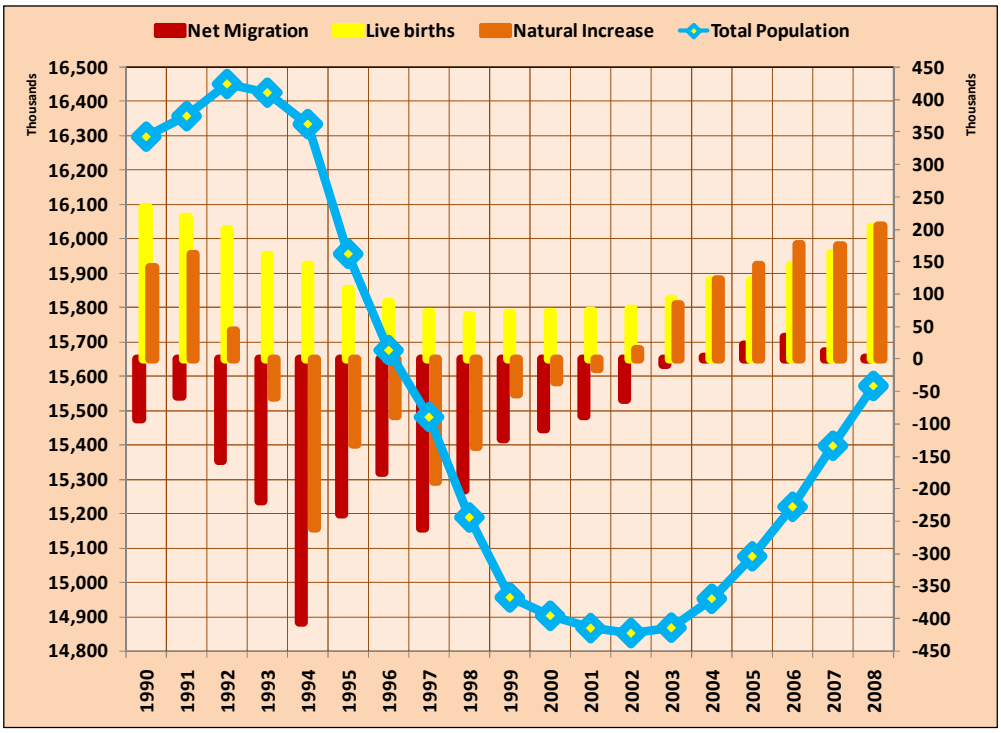
The active socio-economic and political process in the beginning of 1990's influenced the demographic situation in Kazakhstan. The new demographic situation resulted in structural changes of population, in the level of urbanization, in ethnic composition, in sex ratio etc. These changes were stipulated by several factors: the migratory processes, low fertility, high adult and child mortality, life expectancy decline, low marriage rates and high divorces and dissolution rates as well as many other factors. However, the most major factors which had contributed to a considerable change in demographic picture of Kazakhstan after independence were the active migratory processes (mostly with a negative net migration value) and low rates of natural increase.

Economic, social and political factors became the main reasons of migration in the beginning of 1990's. These factors interact and cooperate with each other and still have an influence on current migratory processes in Kazakhstan. In the period of 1992-2003, 2 863 616 people emigrated from Kazakhstan. During the same period 812 777 people immigrated from abroad. Thus, there is an overall negative net migration value of 2 050 839 people in this period. It should be noted that the intensity of migration was not the same all the time after independence. (Statistics Agency of the Republic of Kazakhstan)

In 1993 and 1994 the loss associated with migration had not only absorbed the natural increase value, but also exceeded it in 1.4 and 2.8 times correspondingly. The increased outflows of migration had been noted in 1990, 1992, 1994, 1997 and 1998. High activity of emigrants was observed during 1992-1998 (81.4% of the total negative net migration), then this process started to slow down, and with each subsequent year the slowdown became more pronounced. The peak of emigration was observed in 1994, when the number of emigrant was 481 000 people (or 24.52‰) (Jumasultanov, 2005).

The Census-1999 had recorded negative demographic results during the first years of independence. The sharp decline of fertility rates and raise of mortality rates, the huge migration outflow led to a decrease in total number of population (by 7.7%). Nevertheless, the trend of migration had stabilized by the end of the 1990's when the size of negative net migration gradually started to lessen. Thus, the number of emigrants in 2000 decreased by 3 times compared to 1994, while negative net migration decreased in 3.3 times (Jumasultanov, 2005). Since the second half of 2000's the pace of general migratory intensity and the value of migratory losses had gained a consecutive declining trend. Finally, in 2004 the number of immigrants exceeded the number of emigrants. Since 2002, the natural increase exceeded the negative input of net migration, and from 2004 the population of Kazakhstan started to grow due to positive effect of both of these components. Gradually, the migration outflows had decreased, while the natural increase rates amplified.

Chart 21 – Dynamics of population change in Kazakhstan (1990-2008)



The main migration flows were being directed both to countries of far and near abroad. Among the neighboring and near abroad countries Russia, Ukraine and Central Asian republics became the main countries of migratory exchange. During 1992 – 1994 the 73% of the total number of emigrants from Kazakhstan settled in the CIS countries. In the "peak" 1994 this number had reached 78%, when Russia accounted 72% of these emigrants, Ukraine 2%, Uzbekistan 1.7%, Belarus and Kyrgyzstan by 1%. This trend continued throughout the 1990's. Thus, in 1999-2000 the main migration outflows were still directed to the CIS countries. However, if the emigration to Russia, Belarus and Ukraine exceeded immigration from these countries, with the countries of Central Asian republics, Kazakhstan had a positive net migration "exchange". The overall negative net migration mainly was formed from the migratory relations with Russia and Germany, partially compensated by immigrations, mainly from Uzbekistan. Since 2002, there is a quite clear tendency of decline in the intensity of migratory processes with Russia and Germany, and increase with Uzbekistan. (Jumasultanov, 2005)

The majority of migrants (emigrants and immigrants) are people in active working age, specialists with higher education, qualified and skilled labor force. For example, only in 1998, 27 300 people with higher or incomplete higher education, 57 300 people with vocational training and 106 700 people with secondary education had left Kazakhstan. I agree that there are many evidences how people with high qualifications managed to find new opportunities for themselves in new places where they have migrated. However, when some scientist in Kazakhstan and especially from abroad try to relate high outflows from Kazakhstan with

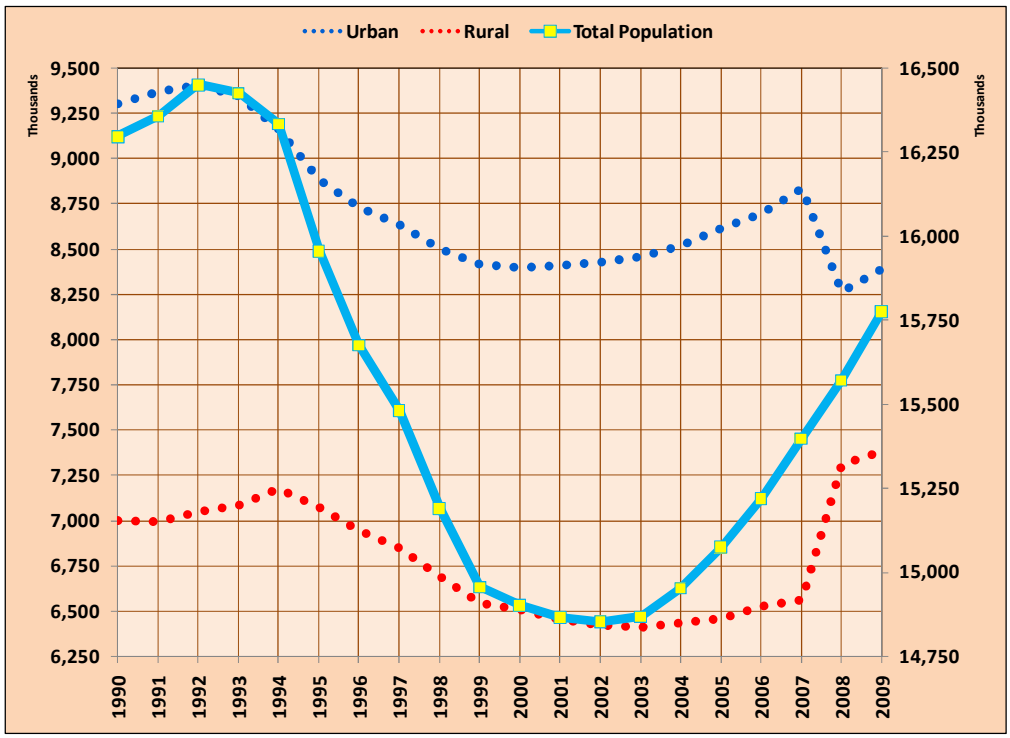
depreciation of human capital or even population quality, that makes me a bit curious and disagreed. Since I believe that, along with probable better opportunities outside the country of origin which led some people to emigrate, there are other people who decided to leave their homeland due to inability to compete at domestic labor market. Both incentives to move are evident from history. Besides, the people with the similar behavior but with different motivations and skills immigrated to Kazakhstan from abroad. There are probably some "genius" and "outcasts" as well, among these immigrants. And these people hoped to find new opportunities what emigrants could not. Well, there is another issue more. Another opinion exists concerning the pseudo-absolute quality of emigrants related to the concept of "new capitalism". The humanity has dramatically changed its economic relations, and even economic philosophy, according to some economist, since the early 1990's there are comparatively new role of human and his/her abilities. These new relations value qualitatively and principally new qualifications than which were trained before. This is a new demand for labor force. So, that means a human can not just once and for all acquire final and enough level of qualification and migrate with the stable qualification from country to country. According to new relations human is permanently training and learning. Since Kazakhstan had faced tremendous migration exactly at this period, no one possible to know for sure, how many qualified people affected to population quality in and outside of Kazakhstan. One more issue yet. Any human has his/her labor capital as well as his/her solidarity potential. Let me introduce the value which I call solidarity potential or cohesion capital. The idea a bit similar to social capital, but has several fundamental traits. Social capital is the capital of social relations which provide human (the actor of these relations) with definite benefits according to his/her position in social ties. The cohesion capital is the level of actor's loyalty and willingness to contribute to the particular social relations or networks, in order to fix his/her future individual benefits. Any human by deciding where he/she is going to have better conditions for life, starts to endow his loyalty to this concrete society. The incentive to reside at certain society per se indicates the propensity of human to be needed and helpful for this society. Emigrants suppose endow their emotions to their new homes, co-feel and co-worry for the future of this society, as well as immigrants do. And this is another important condition and value (capital) for any kinds of societies to develop, since without support feelings and cohesion hardly any society can get better prosperity for itself and for people in it. People trust more and have more hopes with defined place of final residence. This can mean that people who came have the highest loyalty to this particular society (if not they did not decide to come here). So this society is the best among all known for them. The loyalty capital means that people will contribute to development of this society, while people who is deciding to move will keep being distant from processes in that society anyway even they are physically present in this particular society, they are in process of decision of eventual move, which makes them to have low cohesion and loyalty capital as well as low intensions to develop this particular society. However, I am really distant to say that all immigrants have adequate level of cohesion capital wherever they moved. Everything depends

on measuring the real level of such kind of capital. Moreover, people can move (migrate) due to plenty of reasons (marital, employment, political and many other) not only economical.

And finally, I think all attempts to correlate outflows and inflows with probable quality loss or gain look a little intolerant and nationalistic, since the migratory processes in Kazakhstan did have an ethnical drive to migrate. Such thoughts are really dangerous and narrow-minded, which doubts the ability of these scientists to think scientifically whenever they say that people how moved out or in have distinctive features related to their intellect and culture. In the end I just want to say, that in analyzing and especially estimating of impacts of migrations in Kazakhstan one has to be very careful and accurate.

The current migratory processes in Kazakhstan are also characterized by high intensities in the internal migration. One reason for these active movements within the country is the mass removals of large numbers of rural residents to cities seeking for jobs. The increased migration flows in direction “village-city” are due to high rural unemployment. A transfer of the capital from Almaty to Astana also played an important role in the growth of internal migration rates, which pulled the displacement of large numbers of young people in the Northern and Central regions of the country. 2 633 000 people in the country changed their permanent residence during 1990-1999 according to official data. Thus, with the change of population in the country, the ratio of urban and rural populations had also changed. According to the Agency on Statistics of Kazakhstan, for ten year period (1989-1999) the urban population decreased by 805 300 persons (8.8%). Its share in total population had decreased by 0.7 percentage points and made up 56%. (Jumasultanov, 2005)

Chart 22 – Dynamics of population change in Kazakhstan (urban and rural)

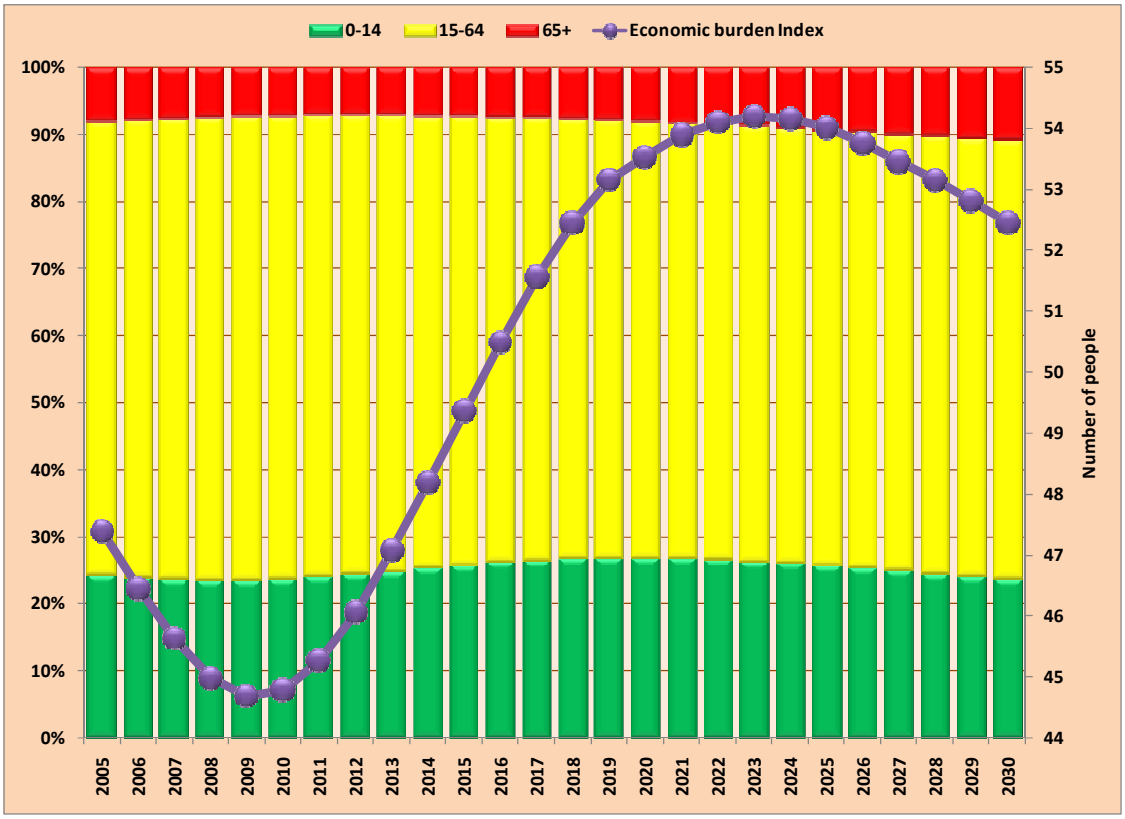


Certain changes had affected the sex ratio in the country. There is a trend in declining of male population share and the prevalence of female population over males. Thus, the number of males, in comparison to 1989, had decreased by 8.2% and had amounted 7 201 800 people, while female population also declined, but by 7.2% and amounted 7 751 300 people. For example, if in 1989 males accounted 48.4%; in 1999 they made up only 48.2%. (Jumasultanov, 2005)

The changes were noticeable also in age structure of the country, for every two able-bodied citizens of Kazakhstan (excluding unemployed) there was in average, at least, one non-working citizen according to age and who lived within families (children under 17 years or a pensioner). Over the period 1990-2003 the number of working-age population had decreased by 83 000 people (0.9%), the absolute number children and adolescents decreased by 608 000 people (11%). The share of persons of retirement age had increased by 1% (Jumasultanov, 2005). If this trend continues Kazakhstan may face the problem of the gradual ageing of the population, which adversely will affect not only demographic, but also the socio-economic situation.

The dynamics of demographic burden on working-age population will probably have wave-like shape. The increased burden due to ageing will be offset by reducing number of children, which indicates a significant ageing of the population and the emergence of additional socio-economic problems in the future related to population ageing.

Chart 23 – Proportion of age groups and level of economic burden in Kazakhstan (2005-2030)



In early independence years Kazakhstan unfortunately was characterized by a high level of morbidity. The main causes of high levels of morbidity and chronic diseases became adverse working conditions, low standards of living, which led to inability to meet important needs related to health, as well as adverse environmental conditions.

Unfortunately, the deterioration of women's and children's health was a considerable aspect of the demographic development in modern Kazakhstan. In 2004, the index of women's health in Kazakhstan was in average 20% (from 100 women 20 are healthy), which is actually a low level. During the period 1993-1998 the incidences of anemia increased in 2 times, the incidence of cardiovascular diseases and nephritis in 1.5 times. About 60% of women in Kazakhstan were anemic, in 2004. These diseases are leading to complications during pregnancy and childbirth (Jumasultanov, 2005). The maternal mortality rate, was 72 people per 100 000 in 1998. The main causes were abortion and various diseases. The child morbidity was also growing. Over the period 1997-2002 the child morbidity among large families increased by 25%. During 2002-2004 period the child disability rates increased by 16%.

3.1.5. Studies about human capital in Soviet period and its development in Kazakhstan after the transition period

In the Soviet economic science the human capital theory was critically interpreted for a long time. The human capital was defined as property and asset of natural and physical capital owners. All the surplus value and additional income from human capital considered to be appropriated by capitalists, but not by workers. The ideological and political aspects of human capital theory were emphasized. Soviet economic science attempted to prove that instead of "human capital" category there exists a category of "labor human" and instead of "intellectual capital" there is "intellectual labor" in economic relations.

All theories were based on the classical political economy work of Karl Marx "Capital", where definition of "capital" and its relevance to content of "human capital" is compared. For example, "Soviet economists argued that the human labor embodied and accumulated in some product and used in new labor is not necessarily a capital, because the capital is social, industrial relations, where a surplus value, created by labor, is appropriated and used by capital for its own self-expansion. Therefore, in their view, it is not possible to adjust the definition of capital to the human activity." (Kritsky, 1995)

The great contribution to the development of socio-economic problems of qualified personnel reproduction in the USSR was made by academician S. G. Strumilin. He can be called as the founder of a new branch of economics, the "education economics" and of special section in science as "economics of vocational education". In his paper, "The qualification of labor and training of workers"-"Kvalifikacia truda i vyuchka rabochikh" (The report on the 2nd All-Russia Congress of Statistics in April 1919), he determined a link between qualifications (skills) and education of workers on the basis of surveys and groupings. He showed that, one year of schooling provides approximately 2.6 times greater increment in qualifications than one year of factory experience. As well the returns from increased productivity of labor exceed the state expenditures on school education in 27.6 times. A worker also benefits from high returns whose earnings rise with growth of labor productivity. (Strumilin, 1982)

An important theoretical, methodological and practical work on the training of qualified personnel was done by scientists at Central Institute of Labor (Centralnyi Institut Truda - CIT), which was established in 1920. The CIT was carrying out different trainings for workers during one year by accelerated program. Thus, in 1931 the CIT had trained more than 8 000 workers for Magnitostroi and Kuzneckostroi, and contributed to the timely putting into operation of these large companies. The CIT developed courses and trainings on setting bases, docking locations and alignment references; team learning; professional development and advanced trainings; retraining for unemployed, etc. (Strumilin, 1982)

Since 1920's in the Soviet Union the public education system had launched, including all levels of educational training and children rearing, professional training of workers and specialists, a system of continuous training and re-training. Even in conditions of military economy (during the II World War), the reproduction of the labor force as the most difficult challenge of national economy restructuring, had been successfully solved in the shortest possible time. The problems of labor and education economics were discussed extensively in the Soviet economic science also in post-war years. In the late 80's and early 90's many political and ideological fetters had been removed in development of economic science in the USSR. Ideas of many schools and theories developed in the "non-communist" economies were re-thought, and the attention of soviet scientists spread to the problem of human capital. (Kritsky, 1995)

"The former socialist system of labor compensation was based on an idea of state (public) ownership of the labor force and labor effort. In this framework:

1) the labor force is distributed and allocated across industries and regions by central planning;
2) the government itself bears all expenses of education and on-the-job training;
3) all results of production belong to the government, so labor income should be regulated by the government and it determines the size of nominal and real wages.
4) the system of centralized wage-setting, which was realized through various phenomena of the centrally planned economy: a tariff wage scale for each job category; regional wage coefficients, designed to compensate workers for taking jobs in regions with bad weather and ecological conditions; centrally or regionally planned distribution of many important public goods such as housing, kindergartens, medical services and deficient commodities.

The expectations of consumer, producer and worker were formed in a world of stable prices, wages, labor demand and labor supply. The equalizing principle of the income distribution became the strongest stereotype of Soviet labor management. Government compensation policy decisions were mostly aimed at attracting a new labor force to the armaments industry or enterprises with poor working conditions. The previous centralized wage-setting system resulted in a weak correlation between wage and personal success, on the one hand, and education, on the other. The connection between earnings and labor effort became weaker, which strengthened the role of informal (shadow) labor incentives and rewards: right of entry to the channels of distribution of deficient commodities, access to the shadow fields of power, hidden social nets, opportunity to obtain unearned incomes, etc." (Nesterova, Sabrianova, 1998)

"As a result of the centralized wage-setting system, the earnings of workers were poorly correlated with their education, and the system imposed relatively small or even perverse returns to human capital. This conclusion was bolstered by the empirical studies of Graeser (1988) and Gregory and Kohlhase (1988). They investigated the determinants of Soviet earnings from the Soviet Interview Project (SIP), consisting of almost 2 800 interviews with Soviet Jewish

emigrants to the United States between 1979 and 1982. The principal findings of the SIP investigations can be generalized in the following statements:

1. The return to education is low for Soviet workers. Gregory and Kohlhase (1988) found that only high-level manpower that had completed higher education yields a positive rate of return. Graeser's (1988) estimates of the returns to added years of schooling vary from 2.3% for secondary education to 5.0% for a university degree.
2. The Soviet gender earnings gap is about 20%, holding other factors including occupation constant; without occupation held constant, Soviet women earn from 22 to 29% less than men. Graeser (1988) shows that in the Soviet period women had relatively higher returns to schooling. This phenomenon can be explained by the fact that Russian males had more opportunities to receive a high salary without investment to education. For Russian women, investment in education was one of a few factors which assisted in reducing the gender wage differentials.
3. Returns to experience are lower than in market economies. Gregory and Kohlhase estimate the rate of return on one more year of experience as 2.3%." (Nesterova, Sabrianova, 1998)

The tariff system and ideological preferences in setting returns to education and skills had disappeared after collapse of Soviet economical system. Workers had been assigned the responsibility for finding a job by themselves. Wage and prices had been allowed to adjust to market forces. Unconstrained wage-setting and structural changes supposed to shift returns in favor of the more educated individuals. However, the changes, during the transition period, in labor force composition, devaluation of some skills, a declining supply of skilled jobs and unemployment growth among educated and experienced people were causing a number of opposite tendencies which account for the declining returns to human capital over the transformation period.

Although, all the proceeding stages in population development are very important for current level of human capital in Kazakhstan, we think that the turbulent political and social transformations in the Kazakhstani society since the announcement of the legendary "Perestroika" (1985, April) are the most significant in order to understand the mechanisms of current levels of human capital in Kazakhstan. In Kazakhstan since "perestroika" and following "shock reforms" the opinion, that in our country, in contrast to developed countries there is little connection between level of educational attainment and level of real income has firmly established. The system of education and professional training existed in Kazakhstan (in Soviet Period) had a directivity distinction in technical and vocational education and training of skilled workers for specific industrial sectors with preferential orientation to narrow professional fields. Therefore, although the overall level of education and training could be estimated as quite high, nevertheless it did not favor the mobility and successful adaptation of the individual in labor market. As a result workers were less mobile and highly attached to one job and occupation during their life-time horizon. Although the general level of schooling was relatively high, this narrow education did not provide the skills and knowledge now demanded by the market

economy. The processes and changes of recent decades differently influenced different social groups and newly formed strata, and accordingly these groups began to show apparent differences in their general socio-economic and demographic behavior.

Today the competitive advantages of a country and its potential for modernization are directly related to the size of accumulated human capital. People, with their education, skills and professional experience, determine the opportunities and frontiers of economic change. Investment in human capital gives an individual some sort of power over their own working life and social status, increases their individual freedom through increased mobility and extends the frontiers of their economic choice. Investment in human capital can thus be one of the most important sources of economic dynamics and growth. Investment in human capital is particularly important during the period of transformation. (Nesterova, Sabrianova, 1998)

In transition period Kazakhstan, the demand for skilled jobs was decreasing relative to the demand for unskilled jobs: there was a significant disproportion between the available supply of skills and the firm demand for skills. In 1990's situation in labor market of Kazakhstan was characterized by a large discrepancy between the available educational capital and the market demand for skills. As we have already stressed, the previous system of education was mostly directed to the training of narrow-skilled specialists for particular industries, and this narrow education does not develop the skills and knowledge which are now demanded by the market economy. Earnings of Kazakhstani workers were measured in many ways, taking into account such phenomena of the transition economy as multiple job-holding, in-kind payments, and income from self-employment and arrears of wages. It should be noted that the estimation of the standard earnings equation for Kazakhstan condition may be distorted owing to considerable regional differences in price and income levels.

3.1.6. Specificity of human capital development in Kazakhstan and its regional differentiation

In previous part we wrote about the importance of structural capital for the company and the country. In conditions of country structure, its optimal set and organizations is also very important condition for advantageous development. The optimal distribution of population and settlement system across the country stipulates better implantation of national economic strategies, in turn each region within optimal regional structure benefits from wise regional policies in as at national level so at successive development of neighboring regions. Thus, the optimal regional population distribution is another type of intangible capital for country and for every citizen.

Unlike countries with optimal regional settings, which ease the creation of developed local economy and local self-government institutions, the regions of Kazakhstan are characterized by vast areas, low population density, highly dispersed productive potential and low capacity of domestic market.

During the transformation of economic and social systems in Kazakhstan the regulatory role of the state in the spatial development had been significantly weakened, which reflected, primarily, in the reduction of public investments in regional development. This has negatively affected the economy of certain regions; the differences between regions have increased according to standards of living, to access to social services, to development of productive and transportation infrastructures. Previously developed regions of the country with highly skilled personnel and high-density of population have witnessed a deep recession and demographic crisis. Problems related to the depressed rural areas and small towns had appeared. The transition process lengthened due to heterogeneity of economic space of Kazakhstan and significant differences in adaptation capacities of regions to new market conditions.

Following processes had significantly influenced the growth and variety of regional problems in Kazakhstan:

- formation of a new geopolitical and economic area;
- transition from the administrative-planned economy to the market economy with an unstable government regulation;
- economic and systemic crisis;
- emergence of new cross-border regions with specific infrastructural, industrial and humanitarian problems. (Muhamedkarimova, 2002)

“The spatial differences according to resource supply; to levels of economic development and quality of life; infrastructure development; ecological condition of environment and severity of social conflicts, are inherent, practically, in all countries of the world. Even in G8 countries the regional per capita income considerably varies by states,

provinces etc. up to 30-50%. These contrasts are permanently and everywhere produced due to different economic and social, strategic and tactical goals of the development." (Tazhin, 1993)

The modern Kazakhstan has a lot of common regional issues with the countries that retain the dynamics of socio-economic transformation in the regional context. However, the vastness of the territory sometimes creates the illusion of less urgency, in Kazakhstan, of active and smart policy in ekistics, in comparison with small countries. Meanwhile, in Kazakhstan, with its vast spaces, the implementation of far-seeing, proactive, science-based settlement policy is topical and may help to save significant funds.

Since independence of Kazakhstan the state policy for management of regional development has always been aimed at achieving the proclaimed national goals: full employment, improving quality of life, equitable distribution of income, stable economic growth, etc. Kazakhstan has no exceptions in an effort to improve living standards in lagging regions, to eliminate regional disparities of socio-economic development.

The modern regional policy in Kazakhstan is based on the theory of regional growth, the theory of unbalanced regional development. It is aimed at active support of problematic regions and establishment of local and municipal government, the state regulations of regional disparities, stimulation of investments and private capital inflows to underdeveloped regions. From market-based instruments of regional policy are used different subsidies, credit and fiscal leverages. (Muhamedkarimova, 2002)

The regional contrasts in Kazakhstan, in the levels of production development and social standards of living, are rather notable. Especially, the imbalances between "capital region", rapidly developing Western regions and Southern and Northern agricultural regions are pronounced as well as between urban and rural areas. (See Appendix 3, for details) These circumstances compel the government of Kazakhstan to focus on "spatial reconstruction" of the country in order to achieve a balance in the distribution of economy and population.

The allocation of productive forces in the country is very uneven and has its own characteristics in different economic zones and natural areas with different physical-geographical, historical and demographic conditions of infrastructure development. The scientific literature usually distinguishes five economic regions (natural economic zones) in Kazakhstan: Northern, Central, Eastern, Western and Southern. The reason for interregional disparities in living standards is the strengthening of sectoral, professional and social differentiations. (Muhamedkarimova, 2002)

The general national plan includes the development priorities of regions corresponding to the strategy of systemic development. By resolution of the government of Kazakhstan dated May 11, 1999 (#561) "About providing assistance to areas with depressed economies" 27 rural districts, where 15.6% of the population is concentrated, were classified as areas with depressed economies. These districts had been detected and located in all regions of the country, containing 5 districts in the West, 3 districts in the East, 9 districts in the North, 8 districts in the South and 2 districts in the Center. The main problems in these districts were unsatisfactory

state of transportation infrastructure; low provision of qualitative drinking water; adverse and sometimes extreme environmental situation; the unemployment and low level of living standards; the remoteness of product markets and outlets; lack or underdevelopment of infrastructures for processing and marketing of agricultural products. For some areas, the border problems were also very urgent, such as sharing of water resources, plots of arable land, contested parts of the territory, outflows and inflows of population. In accordance with the mentioned resolution a list of investment projects was defined to support the infrastructure of the districts through the national budget. After implementation of a number of measures to render public assistance in 13 districts the economic activity had been resuscitated.

In the classification of Kazakhstan‘s regions the following terminology was admitted:

- *depressed regions*, regions which demonstrated relatively high rate of development in the past;
- *stagnating regions*, characterized by extremely low or “zero” trends and potential to develop;
- *pioneer regions*, or regions of new reclamation and development;
- *micro-region* or *primary economic regions*, with further fragmentation of which their signs are lost;
- *economic regions of the first order* (or *general*), i.e. the regions of higher order which form a regional scheme of macro-division of the country;
- *program (planned) regions*, regions which are subject to targeted development programs and their contours do not always coincide with same regions on administrative territory. For example, a zone of ecological disaster of the Aral region covers the territory of 17 districts of four regions of Kazakhstan: Aktobe, Kyzyl Orda, Karaganda, South Kazakhstan and Turkestan town and actually has effects for all the Central Asian republics;
- *unique (project) regions*, are associated with the implementation of new-built quarter or other national projects. (for example, the construction of Astana, the new capital of Kazakhstan; and technological and financial areas by Almaty.)

In the analysis of territorial disparities, the researchers prima facie, appeal to social and economic conditions of settlement systems. In Kazakhstan there are urbanized regions with large cities, the industrial urban centers (Karaganda, Pavlodar, East Kazakhstan, Aktobe region) and regions with a significant predominance of the rural population (North-Kazakhstan, Almaty, Kyzyl Orda and Akmola regions). Heterogeneous system of rural settlement, is connected with the specifics of transhumance and grain farming, there are significant differences in the social and economical development of the population in these regions.

The sharpest contrasts according to population density are existed between the Western and Southern Kazakhstan. In the Southern part of the country which occupies 26% of the territory 42,7% of the total population resides, while the Western part, which occupies the same territory 27% has only 13,9% of inhabitants of the country and its density is 2,8 times less. There are significant differences between the Southern and Northern regions, latter with less than the quarter of total population, and the difference in the population density is 1.5 times. Central Kazakhstan (Karaganda region) occupies the largest territory in the country, but it is

characterized by low density and uneven distribution of the population which is connected with peculiarities of natural environment and the modern development of economy. The regional settlement system, existing here, is different from other regions with appreciable predominance of urban population (72%). The population density in the regions and major cities of the country is presented in Table 4.

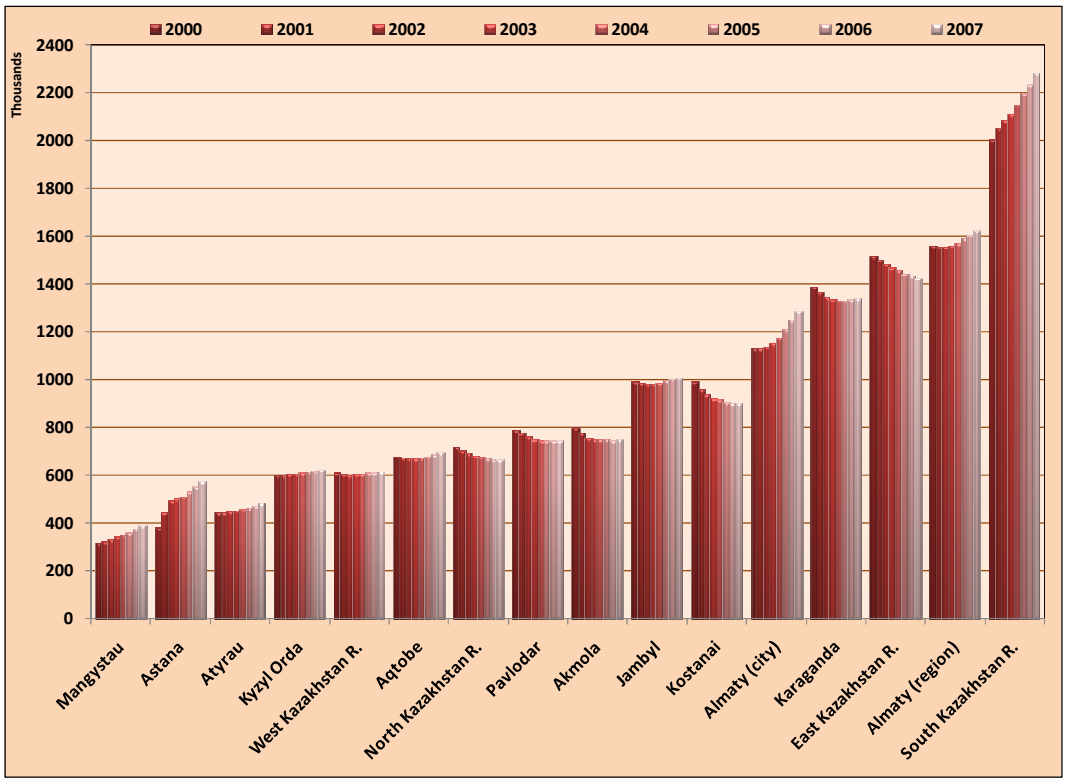
Table 4 - Population of Kazakhstan, 2009 (October)

	Population			Natural Growth						
				Total			Natural Increase		Net Migration	
	Total	Urban	Rural	Total	Urban	Rural	Urban	Rural	Urban	Rural
Kazakhstan	15,942,338	8,520,281	7,422,057	165,846	125,173	40,673	89,430	74,100	35,743	-33,427
Akmola	738,397	333,546	404,851	-3,500	139	-3,639	2,079	1,227	-1,940	-4,866
Aktobe	718,336	390,576	327,760	6,206	4,358	1,848	5,443	2,738	-1,085	-890
Almaty	1,687,271	393,517	1,293,754	20,128	4,825	15,303	4,073	13,455	752	1,848
Atyrau	510,723	250,092	260,631	9,100	6,341	2,759	3,959	3,549	2,382	-790
West Kazakhstan	622,575	280,679	341,896	3,790	4,354	-564	2,202	2,107	2,152	-2,671
Jambyl	1,040,700	436,499	604,201	9,556	4,061	5,495	5,240	8,814	-1,179	-3,319
Karagandy	1,350,214	1,057,855	292,359	3,841	6,652	-2,811	4,452	1,871	2,200	-4,682
Kostanai	886,797	436,248	450,549	-2,571	1,105	-3,676	673	998	432	-4,674
Kyzyl Orda	649,373	231,007	418,366	7,810	4,043	3,767	4,255	5,633	-212	-1,866
Mangystau	439,734	233,848	205,886	14,050	5,693	8,357	4,535	3,532	1,158	4,825
South Kazakhstan	2,417,182	908,410	1,508,772	35,639	13,419	22,220	16,784	26,419	-3,365	-4,199
Pavlodar	750,419	499,286	251,133	1,596	3,732	-2,136	2,612	1,028	1,120	-3,164
North Kazakhstan	644,215	229,956	414,259	-4,021	257	-4,278	346	246	-89	-4,524
East Kazakhstan	1,419,418	771,778	647,640	1,654	3,626	-1,972	3,654	2,483	-28	-4,455
Astana city	673,993	673,993	0	34,682	34,682	0	9,762	0	24,920	0
Almaty city	1,392,991	1,392,991	0	27,886	27,886	0	19,361	0	8,525	0

The regions of Kazakhstan are characterized not only by significant differentiations in actual structure of population, but also by unique characteristics and specific trends in demographic development. (See chart 23) Some regions of the country is characterized by high fertility (Atyrau, Mangystau, Kyzyl Orda and South Kazakhstan regions), but the infant mortality rate is 2-3 times higher in these regions than the all republican level. In other regions, there are the signs of depopulation in rural areas (East Kazakhstan, Pavlodar, Karagandy and North-Kazakhstan regions). There are considerable differences in migration trends among the regions, as well. From 2000 to 2007, the growth of resident population was observed in 9

regions: South-Kazakhstan, Kyzyl Orda, Atyrau, Mangystau, Astana city etc.. While the population in the northern and central regions: Akmola, Kostanai, North Kazakhstan, Pavlodar, Karagandy has noticeably decreased. The main reason was a mechanical loss (outmigration of people from the country), in addition, the lowest rates of natural increase, associated with high mortality and low fertility were observed over the years in these regions. (Statistics Agency of Kazakhstan, 2008)

Chart 24 - Population of Kazakhstan by regions



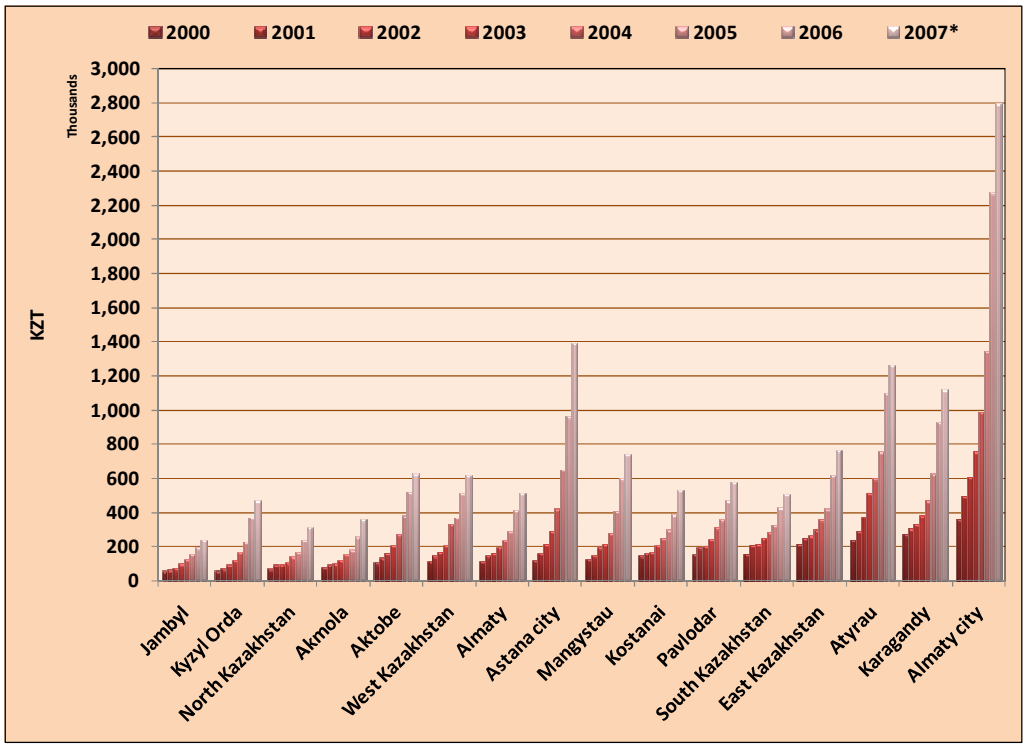
As for the intra-regional (within a region) movements of population, the "socially forced" migrations from rural to urban areas dominated which had exacerbated the tensions in labor markets and crime situation of cities. The migrants, just formally, acquire a status of urban residents and almost do not become involved in social, industrial and cultural life. Despite unemployment, homelessness, low competitiveness on the labor market, increasing role of environmental issues, the city continues to attract the rural population of the country. This is due to the fact that cities offer more diverse opportunities for professional, social and cultural development. The provision of many services such as higher education, specialized medical care, different forms of cultural activity, is possible only in big cities. The real level of access of rural population to various social goods and services is conditioned by traits of the settlement system.

The sharpest imbalance in regional development occurs between urban and rural areas, the economic activity of latter is represented mainly by agrarian sector. The main problems of

rural areas are high unemployment rates, low standards of living, high rates of employment in agriculture, poor infrastructure, large territory, weak link of settlements with markets, peripheral location of many rural areas and villages (auls) and their considerable distance from centers, harsh natural and climatic conditions, acute shortage of water resources, environmental problems of the Aral Sea, Balkhash, the Semei proving area and intensive extraction of oil and gas fields.

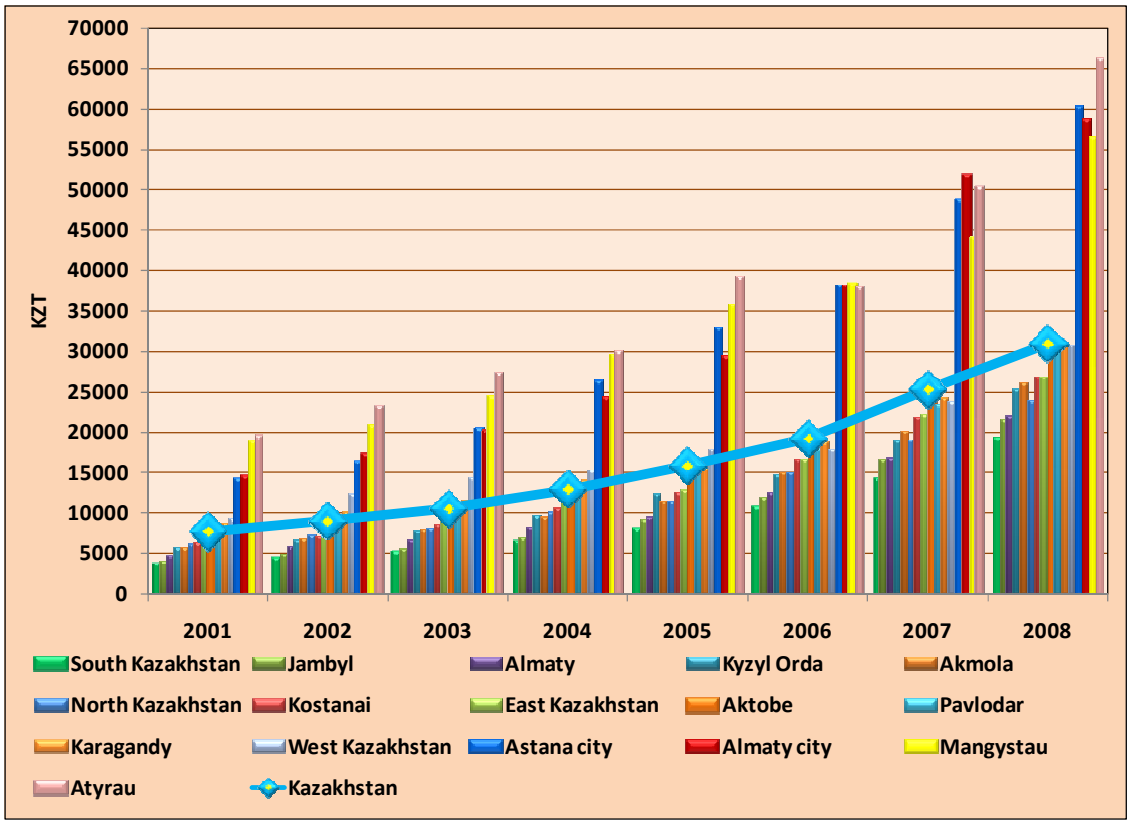
The territorial division of labor and economic structure of regions can be characterized by *Gross Regional Product (GRP) and regional production per capita*. The distribution of country regions by volume of GRP is uneven. The phenomenon of high GRP in almost all areas of the Western region is explained by high concentration of oil and gas sector enterprises. However, the region is unfavorable in terms of broad socio-economic aspect. The region has severe climatic conditions, high costs of life, in recent years the unemployment and an intensive population outflow have risen dramatically from rural areas to regional centers, small towns and the capital, as well as outside the country. (See chart 25)

Chart 25 - Gross Regional Product (Kazakhstan)



In terms of family income, the difference is up to 3.5 times between regions. The maximum income was being received, in 2008, by inhabitants of Atyrau region, the minimum in South Kazakhstan region. There remains a significant income differentiation not only between regions but also within regions. In the Western region the gap between the maximum and minimum levels of income amounted up to 3.4 times, in the North up to 2.1, in the East up to 1.4. (See chart 26)

Chart 26 - Income of families per month (by Region of Kazakhstan)



There are also great differentiations in average wages among regions. The highest level of wages was formed in cities Almaty and Astana, as well in Mangystau region (2007). The wages in South Kazakhstan, Jambyl, Almaty, Akmola, North Kazakhstan and Kyzyl Orda regions are below the national average wage level. The gap between the highest (Mangystau region) and the lowest (Jambyl region) levels of wages, in 2007, was amounted as more than 2 times. While the difference between wages in the extractive and mining industry areas and rural areas of Atyrau and Mangystau regions is up to 6-9 times. (See charts 27 and 28)

The ratio of pecuniary gains (earnings) and actual costs of life (subsistence level) can be regarded as main statistical indicator for comparison of regional levels of life. The share of population with incomes below the subsistence level (below the poverty line) was 31.8% in 2000 and 28.4% in 2001. The smallest proportion of population living below the poverty line in 2008 was in Astana (3.2%), Pavlodar (8.3%), Almaty city (8.5%) and Karagandy (8.5%) regions. The biggest shares of population who live below subsistence level are in following regions: Mangystau 26.9%, Kyzyl Orda 24.6%, Atyrau 18.1%, and Akmola 16.6%. It is interesting that these regions have the highest salaries in republic, but still actual cost of life higher than in other regions. In 2001, more than a half of rural population in all regions of Kazakhstan lives below the poverty line, while in Mangystau region 95.5% of rural population. (See charts 29 and 30)

Chart 27 - Average salary per month (by regions of Kazakhstan)

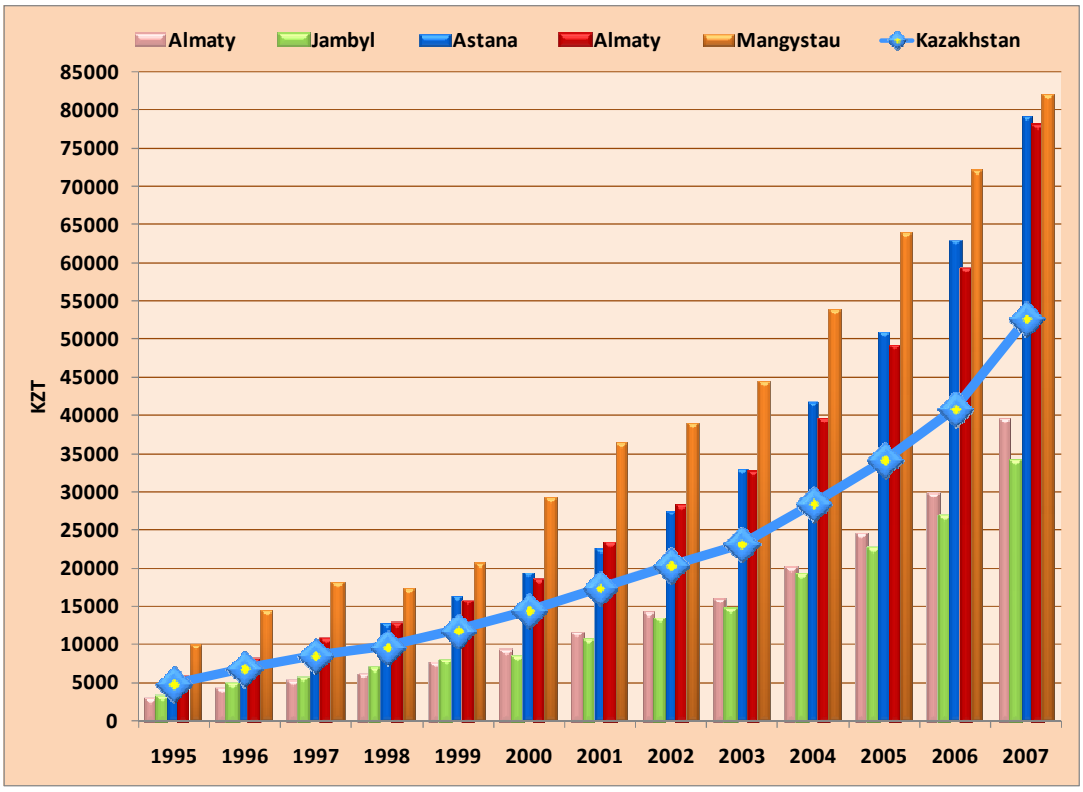


Chart 28 - Average salary by sectors of economy in Kazakhstan

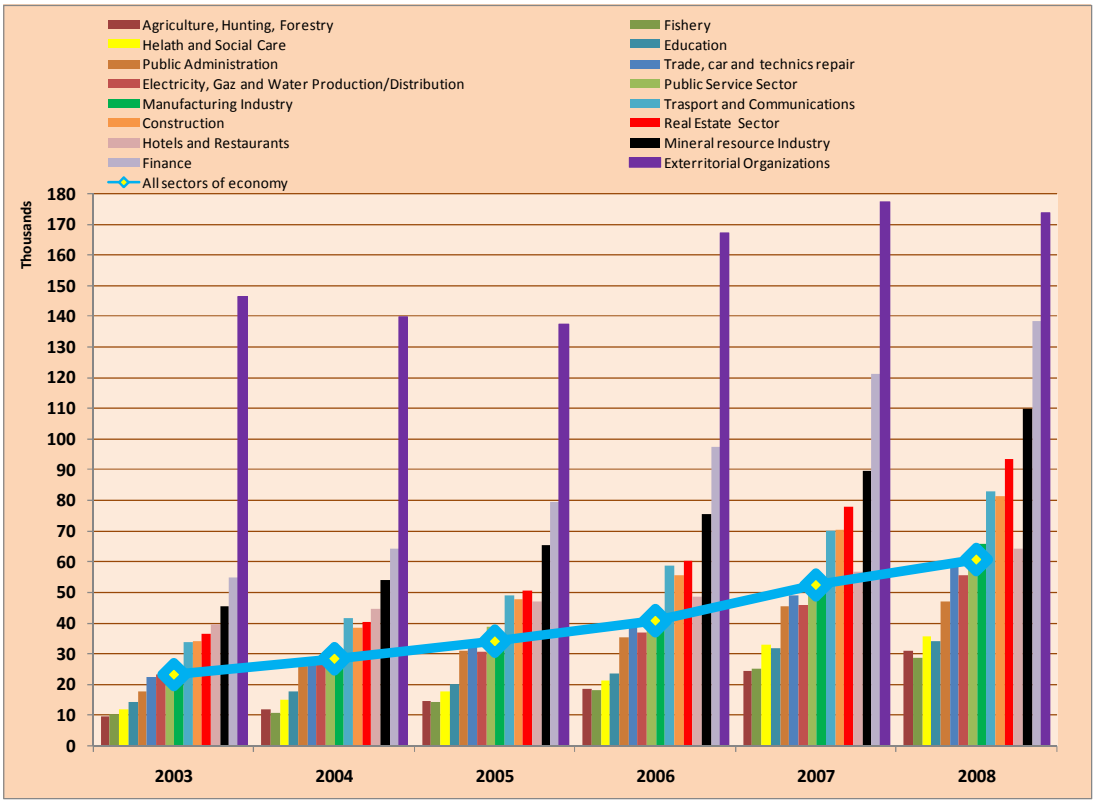


Chart 29 - Subsistence level Ratio (Region/Kazakhstan), 2008

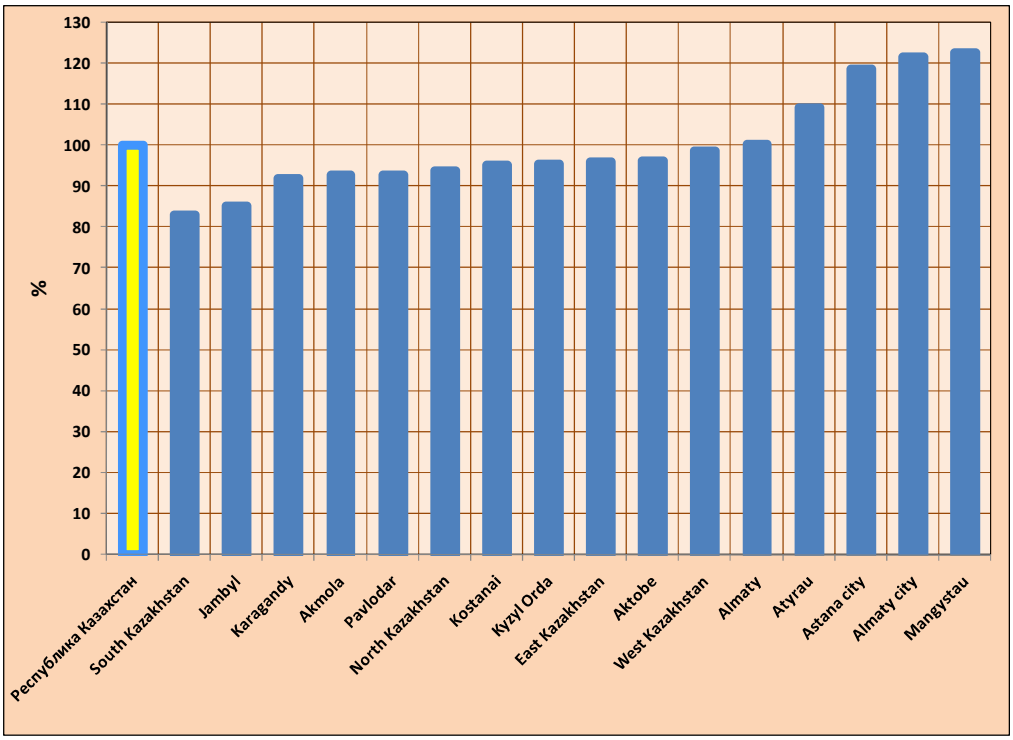
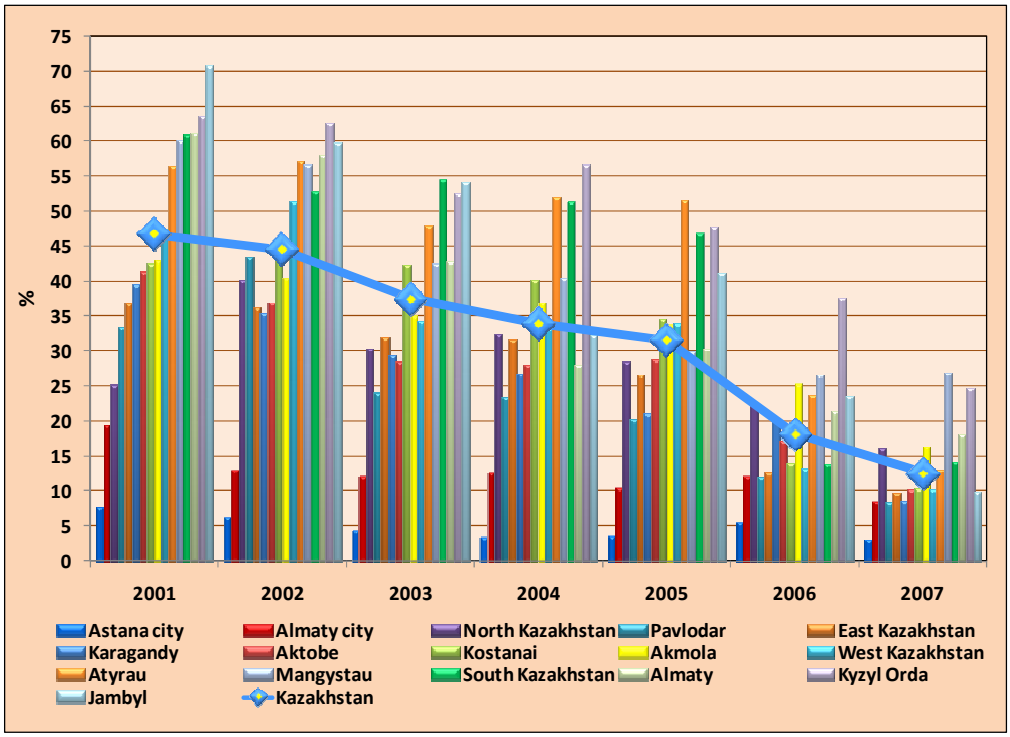


Chart 30 - Share of population living lower the subsistence level



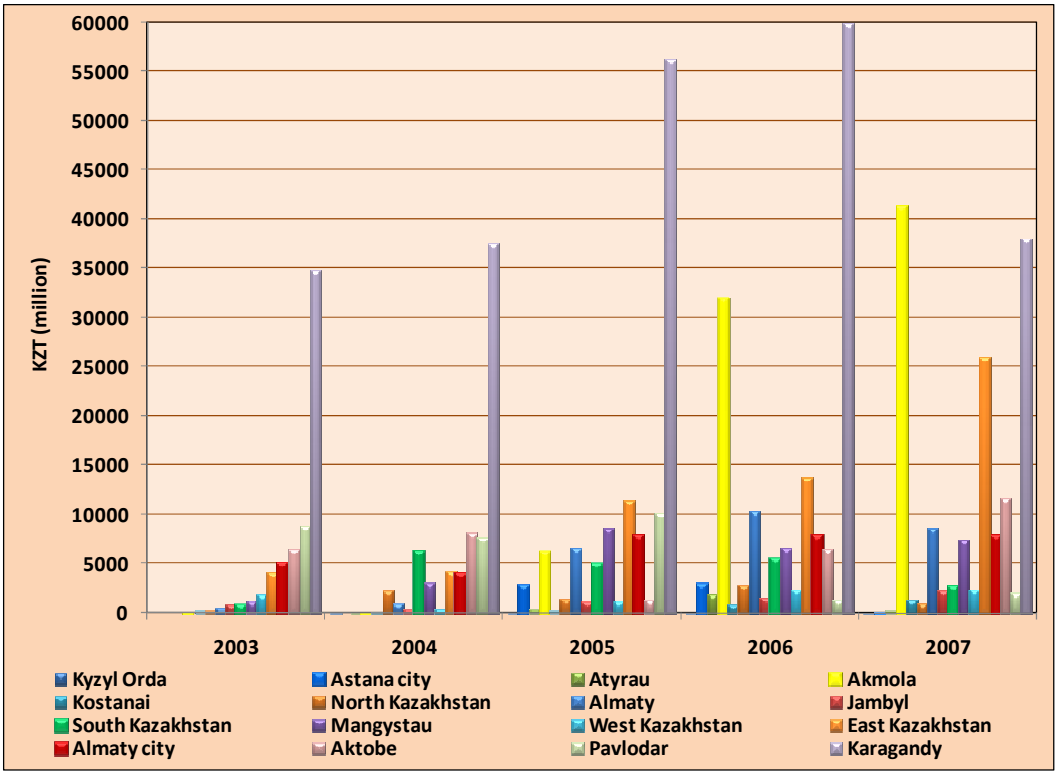
In unitary states, the regional policy carried out by the central government, which equally resorts to using of macro and micro leverages. In the first years of independence and

recovering from systemic crisis, the central government had been focusing on profitable giants of mining industry, in order to achieve macroeconomic stability, however this had strengthened the sectoral and regional disparities. Regional investment policy focused on oil and gas industry, the largest share of investment was in the Western region (Aktobe, West Kazakhstan, Atyrau, Mangystau regions), where hydrocarbon materials are extensively produced. Concentrating only 18% of investment potential, these regions, in 2000-2001, have accumulated more than 50% of all investments in the country. (See chart 29)

The investment climate in the Southern region is also improving, which creates prerequisites for the forthcoming of investment growth centers and poles. Unfortunately, the volume of investments decreased in Karaganda, Kostanai, Pavlodar and East Kazakhstan regions, where the main investment potential of the country has focused. The experience of many countries teaches: the policy of uneven distribution of investment, especially in respect of old industrial regions, may lead to changes in territorial structure of the economy and in the level of interregional disparities in socio-economic development. It is also fraught with gradual transformation of these regions in the problematic and depression regions.

In sectoral structure of investments most of them fall on the industry, the transport and development of communications infrastructure and agriculture. From this perspective, the regions also have their characteristics. Among economic regions the Western Kazakhstan has the highest proportion of industrial investment, the Eastern and Northern Kazakhstan in transport and communications, the Southern in agriculture.

Chart 31 - Volume of innovative production by regions



3.2. Summary and Discussions

In theoretical chapter we tried to determine main concepts and paths of ideas evolution about human capital. One of the principal tasks in previous chapter was to identify proper methods to estimate the level and stock of human capital in a particular society. The question of measurement methods remains open. Still the majority of authors who describe and research human capital in a given society or dealing with interstate comparisons of human capital level, are appealing to proxy measures and relying, basically, on statistics on education and healthcare. Even the whole organizations engaged in human capital studies (such as OECD, NBER, the World Bank, ECOSOC etc.) incline to these proxy measures. Thus, the issue of appropriate general statistics arises very urgent. Unfortunately, the statistics of Kazakhstan can not brag about being perfect during its history, its relevance and limitations was discussed in the beginning of this chapter. This limits us to general description of general historical trends which hypothetically could influence human capital in Kazakhstan.

We also searched for the peculiarities of human capital in Kazakhstan, peculiarities associated with population (its history, composition). As we saw in this chapter the population of Kazakhstan faced several completely different socio-economical and political processes in comparatively shorts periods of history, which have influenced its trends of development and resulted to its current characteristics.

For most of the 20th Century Kazakhstan was a centrally planned economy, wrapped up in the Soviet planning structure as much as any Soviet state. Kazakhstan, as with all of the former centrally planned economies has been forced into significant macroeconomic and institutional changes as a result of the very significant restructuring required after the fall of the Soviet Union. It is the changes forced on Kazakhstan by the external factors that needed to be addressed by an existing institutional structure developed during the Soviet system. The economic performance in Kazakhstan at the end of the Soviet era was characterized by:

- The rapid decline in GDP since independence from the former Soviet Union in 1991;
- Significant macroeconomic instability including virtual hyper inflation;
- An outdated industrial infrastructure;
- A legacy of high government involvement and central planning in directing industry;
- A poor record of both foreign and domestic investment;
- A lack of contact with western markets and business practices and a business mentality that had little experience of dealing outside the central planning system. This was a more isolated environment than would have been influencing many of the countries of Central and Eastern Europe.

“Kazakhstan has started its independence with some of the least developed market institutions. The transition to a market economy for Kazakhstan during the early 1990’s focused on rapid privatization and liberalization of markets. The focus of transition since the initial

euphoria of liberalization and increased private sector ownership was on the development of institutions to regulate the economy, including governance, competition laws, development of public sector service provision. This is taking time and is by no means completed and the role of the state is an issue, as the system of laws in Kazakhstan are evolving, and the state is operating in a society that had, in 1991, a virtual complete lack of modern market institutions, and where private ownership had never been supported by the legislature." (Charman, 2007)

Kazakhstan has faced tremendous social changes after collapse of the U.S.S.R. It was not only collapse of political regime, but also the collapse of established socio-economical relations in the society. The legacy of planning was to leave the Kazakhstan stretched beyond its means, and the collapse, in terms of employment, and social infrastructure. It seemed that for the moment society stuck in the condition of sovereignty euphoria while facing revolutionary transition to unknown for society new political socio-economic and other conditions.

Doubtlessly all these socio-economic and political changes did influenced demographic processes in Kazakhstan in a special post-communistic condition. Z. Pavlik indicates that "post-communistic societies have their own peculiarities in demographic development. He wrote that in post-communist states the altered situation due to political, economic and social change created conditions for accelerated demographic behavior transformations. The transition into a market economy and all its social consequences, its new opportunities of self-realization, led to demographic behavior changes." (Pavlik, 2002)

"The institutional framework for competition, governance, the labor market institutions, and the financial sector, the social protection and the welfare state are still evolving in the country, and therefore Kazakhstan lacks the "complementarity" between the institutions and the regulatory framework. The consequences of a weak core of public sector institutions in Kazakhstan are considerable. In the early 1990s it was realized that corruption and public accountability were very important, and the rule of law also." (Charman, 2007)

"In new conditions, people faced higher demands on the labor market, experience was valued and significant work flexibility was expected and unemployment appeared as a new reality. Increased competition on the labor market led to more frequent studying and further qualified preparation. Furthermore the endeavor to achieve a higher position, better income and the concurrent risk of not finding or losing one's job have become important conditions in the demographic decision-making process." (Pavlik, 2002)

The social self responsibility appeared as another new phenomenon at this new reality. Nobody could understand clearly what exactly the new conditions can bring, but everybody understood that there is nothing planned and controlled. It took some time for population to realize the actual benefit of self-reliable well-being strategy. This was the new view of the changing world. Fortunately, the state never denied continuing of conduction the social policy, by implementing different programs. Keeping the tradition of advantageous sides of former Soviet social policy the government tried, at same time, to introduce new philosophy of social responsibility of the state, i.e. to teach people to fish instead of granting the fish. In this respect

we think this new philosophy have changed not only the role of state in human capital formation, but also led to more practical implications of human capital accumulation by every citizen him/herself.

Swift shift from one established system of relations to another had forced people to expedite the relocation and re-evaluation of their human capital. As we have written before, the human capital develops in conditions of overall development of basic capital and other types of human capital and components of population quality. In Kazakhstan the development of human capital in the beginning of independence went under following conditions:

1. Re-Evaluation of human skills and adoption of market based skills by population;
2. Ruling of the "young government" with little experience in new market economy;
3. Global economical changes (increasing role of human skills and service sphere);
4. Change of income and consumption structures;
5. Continuing activization of the Demographic Transition in Kazakhstan and Central Asia.

"As with most of the former centrally planned Republics of Eastern Europe and the CIS, the type of economical relations that has developed in Kazakhstan has been very dependent on the economic and institutional legacy that was left at the demise of central planning, and has been strongly influenced by the social and economic systems that are inherent to the local culture. In the case of Kazakhstan the legacy of the former Soviet Union was particularly disadvantageous, and the need to continue to build a new Kazakhstan society, govern a very large and sparsely populated country with no institutional framework, was particularly strong, which is still evolving." (Charman, 2007)

Existing peculiarities of population resettlement in the country had led to the significant differences in development of infrastructures between rural and urban communities of the country. In turn the infrastructure is a major factor in the integration of regional systems and nexus of disparate parts of regional socio-economic space. The competitiveness of national economy depends to large extent on the state of productive and social infrastructure. Effective economic development is impossible without an adequate quality of informational, telecommunication and transport infrastructures. Among the numerous social infrastructures the availability of institutions and organizations of health, education, culture and public services, especially in rural areas has a paramount importance.

In the constantly changing world the traditional regional problems do not disappear, they just move into a new quality. Fundamentally new regional problems arise during the transition to a postindustrial and informational society and due to the globalization of economy. In periods of transformation of economic, social and political relations the state regulations of regional issues have played an important role in the development of most countries of the world. In developed countries it is regarded, primarily, as means of state regulations of socio-economic processes in problematic regions of the country and the removal of social and environmental tensions.

In all countries of the world the differences in geographic location, climatic conditions, demography, history of development and other factors are affecting the socio-economic development of their regions. Each country is striving for improvement of standard of living in its underdeveloped regions, i.e. to implement the regional policy aimed at evening the conditions and opportunities for socio-economic development of all regions, and thereby enhance the level and quality of human capital. The regional policy in almost all countries is the main means of state regulations of socio-economic processes of the troubled regions to eliminate social and environmental tensions.

The current state of regional development in Kazakhstan reflects the main features of the transition period. The system of regulations of regional development and regional policy is developing and becoming a major factor in the success of sustainable development of the country. The aim of regional policy of Kazakhstan is the effective use of natural and human resources potential, the removal of unacceptable disparities in economic prosperity of regions.

As the logical result, all these new socio-economic conditions led to significant demographic changes. Population had faced new conditions of return on human capital. In current chapter we have tried to show how new political and socio-economic conditions after independence, gathered economical and social difficulties of proceeding years before the collapse had lead to social and demographic changes in Kazakhstani society. The mentioned difficulties and immediate depreciation of human capital was not only because of the rapid socio-economical changes, but also due to the lack of awareness and misunderstanding of the phenomenon of human capital in previous communistic society. As it was discussed in this chapter the concept of human capital for a long period during the Soviet era was not fully correctly comprehended.

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4. Conclusion

The issues of population quality are really very important in population studies and many people are willing to understand aspects of population quality and human capital. However, the issues of human capital and especially of population quality are never easy. We saw in previous chapters how ideas about population quality and human capital have developed, what are the types, structure and components of human capital, what are the factors which form human capital and what kind of cycles determine human capital reproduction. Nonetheless, the issues of measuring the human capital become the bedrock of human capital studies. It is obvious that one who can manage to determine the adequate and accurate methods of measuring the human capital can answer the question what is the level and character of human capital in a given society. Anyway, realizing the urgent importance of measurement method elaboration, do not hasten to search for ideal methods of measuring human capital, because the exaggerated desire to find an ultimate measurement method of human capital can easily lead to unnecessary departing from core research questions.

My inexperienced maximalism put me forward to grasp as much widely known (and sometimes unknown) methods of research as possible. But, this strategy could eventually lead to failure, since as I understood later that the speculations in the field of proper methods of research without introducing simple data (in my case statistical data) would be endless. In heaps of works related to human capital issues, the majority of authors just imply that human capital can be represented by educational, professional, qualificational and health indicators. Of course, these are the proxy measures, but I agree, with majority of researchers, that these are successful and appropriate measures in terms of describing national human capital. So this approach helped me to concentrate on more practical issues of human capital in Kazakhstan. However, despite this approach I tried to discuss a little bit about general problems of measuring human capital.

"The foregoing discussion clearly points to the need for or lead the development of a wide range of measures of human capital: encompassing input/investment measures, output/stock measures and outcome measures. Different research topics will require different measures of human capital that may well involve combining numerous individual series. No single measure of human capital is likely to be suited to all research questions. At this stage there is no definitive measure of human capital. Moreover, we do not see the absence of an all-encompassing widely accepted definition of human capital as an obstacle." (Stroombergen, 2002) The interpretation of the quality of resulting output will also depend on the uses to which a particular measure is to be put. Measures of human capital are inputs in some areas and outputs in others and different measures suit different research questions. While a brief survey of the literature can certainly reveal that a diversity of measures is likely to continue to prevail –

for both practical and theoretical reasons. Many different measures exist and are likely to continue to do so.

"In the absence of well-defined measures of human capital researchers have had to appeal to proxy measures, such as years of schooling. Whereas the researches generally shows positive effects of formal education which does improve human capital as measured by earnings, in case of measuring national human capital and its influence on economic growth one should be very careful with proxy measures applying to human capital, since it is clear that a wide definition of human capital is required here, as economic growth captures not only the direct benefits to the individual of investment in human capital, but also the positive externalities that a skilled population encompasses. The input series used to analyze growth overlap with the output series in the education research. In practice, proxies for human capital have been introduced on the hoof and there is a lot of variability in underlying definitions. This points to a fairly eclectic program of gathering together series and measures that relate to, but do not necessarily closely define human capital, but nevertheless could still be found useful by researchers investigating one or other aspect of human capital theory. This has led to an extensive literature on relationships between educational inputs and attainments, on the one hand, and outcomes such as earnings and the rate of economic growth, on the other. In such cases the researcher's interest may lie in the connection between human capital and some particular outcome, such as income, what is actually being tested here, is the relationship between the proxy and the outcome. Proxy measures for human capital need to be selected carefully, both on the input side and the output side. The main problem in the literature is that poor proxies are used for human capital." (Stroombergen, 2002)

The statistical data represent only small part of the real process, while human capital per se concerns to different spheres of socio-economic life (it is not solely economical or solely demographical issue). This approach requires complex analysis of human capital. Traditionally, economists have estimated human capital on the basis of years of schooling or formal educational attainment levels, regardless of actual productive capacity. This approach largely reflects the paucity of official statistics on this topic. Internationally, work has begun on expanding the available set of human capital measures, although this work is still in its early stages. In Kazakhstan, work has been hampered by lack of an appropriate range of data on a consistent and continuing basis.

Indeed the human capital is somehow a proxy measure by itself, in terms of describing a specific phenomenon of human and society. This phenomenon can be:

- a measure indicating the human's ability
- a feature of human's abilities
- a level of human's ability
- an asset containing the human's ability
- a value representing the human's ability
- a stock of abilities

- a resource of abilities
- a condition where human uses his/her abilities
- a potential etc.

It is important to state that, although this work attempts to be relatively comprehensive, its collection of statistics is not complete. Space and resource considerations have necessitated a degree of selection from the available information. This was done on the basis of covering the breadth of publicly available data sources – often with the use of higher level summary statistics.

The studying of issues of human capital emphasizes the role of population studies. Every researcher dealing with human capital has to pay a special attention to issues of population studies. The role of population studies with the human in the center is increasing in general social science. Now, population studies can act as a corner stone of any socio-economic researches. Human capital theory emphasizes the role of population studies in such important spheres of social life as economical development. The situation with the socio-economic, political and demographical processes to date in Kazakhstan leaves a big implication on the conclusions about human capital in the country.

The idea of human capital is not just a simple description of population abilities to reproduce needed labor qualities for development. The idea of human capital represents the form of complex human interaction of every member of society with social environment. Human capital can not be developed in isolation. Rather, it is influenced by the interaction of complex demographic, social and economic factors. The basis of human capital is people. Therefore, the key factor that influences the size of a country's stock of human capital is demographic. The attainable level of human capital stock can be promoted or limited fundamentally by population. In addition, the characteristics of population (for example, its age profile) have a large influence on the potential stock of human capital – both for today and in the future.

Generally, human capital can be (or should be) comprehended as a dynamical (non-static) form of capital. It is considerably difficult and not always correct to measure the human capital in momentum. Preliminary we suggest treating human capital level as the longitude indicator rather than cross sectional (sections here mean series of momentums at which human implements its economical activity). The longitude approach can catch diverse characteristics of human capital.

Different types of human capital co-exist in close interaction with each other and "co-help" to development of each. We were writing about different types of human capital in previous chapters, now we would like to note that all the types of human capital reach optimal return in the case of concordant and complex development of all types of human capital. Piachaud rightfully noticed that high-qualified surgeon with high level of human capital can do nothing without provided physical capital (i.e. well equipped hospitals) and better team of colleagues. (Piachaud, 2002) The same relations exist at the macro level, too. Thus, there is a

need for balanced development of different types of capital. Moreover, human capital influences and changes, develops not only an earning behavior and earning structure, but also a consumption behavior and consumption structure. This also brings the benefit and can be considered as a factor of capital accumulation.

Furthermore, since the level of human capital obtained can vary from human to human, even in the case of similar volume of investments in each, here we have to acknowledge the importance of conditions as another source of human capital accumulation. The conditions are also determining significantly the character of final accumulation of human capital. We suggest taking into consideration the conditions varieties and condition studies, during the measuring of human capital.

During the process of studying the main factors of population quality and human capital formation, inevitably, one can come to conclusion that the real level and character of human capital development, notwithstanding all mentioned theoretical issues, are highly dependent on political situation and political decisions in the country. We clearly realize that mixing of politics with science is not always good approach. However, proceeding from the objectives of this work we can not inallude that indeed the human capital strongly dependent on policy and political decisions. All the theories and recommendations, researches and discoveries concerning this topic will not release from the frames of discussions, papers and publications without setting the issues of policy. If we really want to prosper population quality and human capital development, we (demographers and other social researchers) have to address to politicians and political decision makers. In short, the human capital formation and reproduction processes are closely coupled with general policy.

Finally, we would like to mention that actually, we all got accustomed to quantitative paradigm of data perception. Whenever we try to describe the quality or qualitative characteristics we are still appealing to quantitative indicators and measures, perceiving quantitative paradigm. Inherently the idea of measure is already the entity of quantitative approach. Mathematics as a science and method of cognition considerably has broadened the perception of objective reality. Various formulas, tables, matrices, axes, diagrams, charts, percentages, promiles, proportions, means, averages, weights, indices and many other indicators and any numbers calculated in mathematical way, all can be easily comprehended by modern human being. By my personal opinion, this quantitative paradigm is comparatively easy for comprehension, while the quality represents unlimited set of measures all at same time and same object. Although, we all well know that, according to dialectics the ideas of quantity and quality are not mutually exclusive, they co-exist abreast, here, we would like to stress how important is the perception of qualitative approach but not the contradistinction of quality and quantity. We just assume that phenomenon of quality per se exists in its specific entity, where quantitative cognition approach can show only a separate part of it. However, what is the measurement of quality anyway? The human mind will never know rest until it finds the way to measure what is the quality and what is not, what is “more” and what is “less” quality…